Roles and Postpartum Distress: Relationship Adjustment as a Mediator

Sara E. Boeding

A dissertation submitted to the faculty of The University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the Department of Psychology (Clinical Psychology).

Chapel Hill
2013

Approved by:

Don Baucom, Ph.D.

Jon Abramowitz, Ph.D.

Sara Algoe, Ph.D.

Anna Brandon, Ph.D.

Samantha Meltzer-Brody, M.D.

ABSTRACT

SARA E. BOEDING: Roles and Postpartum Distress: Relationship Adjustment as a Mediator
(Under the direction of Donald Baucom)

Despite societal beliefs to the contrary, both men and women often experience a mixture of anxiety and depressive symptoms during the postpartum period, referred to here as postpartum distress (PPD). The aim of this study was to explicate whether various aspects of role functioning during the postpartum period (including role intensity, role acceptability, work-family strain, and work-family gains) are associated with PPD, and whether this association may be partially explained by relationship adjustment. Eighty-three couples who were 4-12 weeks postpartum were recruited for this study from local medical centers and the community at large. Couples were asked to complete a battery of questionnaires online via Qualtrics. Data were analyzed using path analysis (PA). Results indicate that men's experience of role unacceptability predicted their own greater PPD, partially mediated by their own poorer relationship adjustment, as well as *women's* poorer relationship adjustment. Additionally, women's work-family strain predicted their own greater PPD as well as men's *greater* relationship adjustment. When considering specific domains, neither men's nor women's report of role involvement and role satisfaction predicted women's relationship adjustment or PPD. However, men's greater role involvement and greater role satisfaction in family decision-making, as well as women's greater role satisfaction in family decision-making, each predicted less PPD for

men; these effects were fully mediated by men's greater relationship adjustment. Additionally, men's greater involvement in childcare per women's report predicted greater PPD for men. Research and clinical implications are discussed.

TABLE OF CONTENTS

LIST OF TABLES

Table

LIST OF FIGURES

Figure

Roles and Postpartum Distress: Relationship Adjustment as a Mediator

Although the birth of a child is generally touted in society as a joyful or "magical" time, the postpartum period is often marked by difficult transitions, a decline in relationship functioning (e.g., Doss, Rhoades, Stanley, & Markman, 2009), and depressed mood (O'Hara, 2009). In fact, 30-75% of new mothers report feeling "postpartum blues" (i.e., mood disturbances which occur within the first 10 days postpartum; Banti et al., 2009; O'Hara, 2009). Moreover, 19.2% of women and 7.7% of men experience either a minor or major depressive episode within the first three months postpartum (Gavin et al., 2005; Paulson & Bazemore, 2010). Furthermore, those who experience depression also tend to experience anxiety, including both general anxiety and obsessive-compulsive symptoms (Abramowitz et al., 2010); in fact, anxiety is often considered a distinguishing feature of postpartum depression (e.g., Banti et al., 2009; Ross, Evans, Sellers, & Romach, 2003). Thus, despite societal beliefs to the contrary, the postpartum period is often a distressing time, with many experiencing a mixture of anxiety and depressive symptoms, referred to herein as postpartum distress (PPD).

PPD can have a devastating impact not only on new parents but on their offspring as well (Flynn, 2010). For instance, infants of mothers with PPD display less positive affect and are more withdrawn and fussy (O'Hara, 2009). Furthermore, toddlers and young children whose mothers had PPD are at a greater risk for cognitive, social, and emotional deficits (e.g., Burke 2003; O'Hara, 2009). Given the high rates of PDD and the

disability associated with it for both parents and their children, it is imperative to develop a detailed understanding of factors that contribute to the experience of PPD.

Although the current literature focuses primarily on PPD in women, the postpartum period is also distressing for men. Men often report feeling uncomfortable, distressed, and at times excluded or irrelevant in the postpartum period (Bartlett, 2004). Also similar to women, during this time men experience mental health problems such as depression, general anxiety, and obsessive-compulsive disorder (see Bradley & Slade, 2011 for a review). Indeed, men's PPD is often comorbid with women's PPD (e.g., Edhborg, Matthiesen, Lundh, & Widström, 2005). Partners of women who have PPD experience higher levels of parenting stress and are more likely to be depressed themselves than partners of women who do not have PPD (Goodman, 2008; Pinheiro et al., 2006; Roberts, Bushnell, Collings, & Purdie, 2006). Thus, it is imperative to elucidate factors which contribute to PPD for *both* men and women.

A multitude of factors may contribute to the onset and maintenance of PPD. Indeed, research to date has largely focused on identifying such risk factors in the prenatal period and predicting women's PPD from these prenatal risk factors. For example, one large prospective study found that the largest risk factors for PPD were prenatal depression, a history of depression, and low social support from one's partner (Milgrom et al., 2008), results which are consistent with recent meta-analyses and reviews (e.g., Banti et al., 2009; Beck, 2001; O'Hara & Swain, 1996; Robertson, Grace, Wallington, & Stewart, 2004). Additional moderate to strong risk factors include prenatal anxiety, postpartum blues, childcare stress, and life stressors. Psychological and personality variables also emerge as moderate risk factors; key factors include low self-

esteem, neuroticism, and a "negative cognitive attributional style" characterized by pessimism and rumination (Banti et al., 2009; Beck, 2001). In addition, infant temperament and the couple's relationship confer a moderate risk to women, such that a difficult infant temperament or poor relationship adjustment predict PPD. Finally, risk factors with a small effect size include obstetric factors, such as complications during pregnancy or birth, and low SES.

Fewer studies have examined predictors of men's PPD. Those that have explored this issue have found that in addition to women's PPD, predictors of men's PPD include low relationship satisfaction or adjustment, low self-esteem, an unsupportive partner, a high discrepancy between prenatal expectations and experiences postpartum, and unemployment (Ballard & Davies, 1996; Bielawska-Batorowicz & Kossakowska-Petrycka, 2006; Wang & Chen, 2006; Wee et al., 2010). Evidence regarding men's neuroticism is mixed, with one study finding it was not associated with PPD (Bielawska-Batorowicz & Kossakowska-Petrycka, 2006) and another finding that it was (Dudley, Roy, Kelk, & Bernard, 2001). Finally, women's relationship satisfaction also predicts men's PPD, such that men are more likely to experience PPD if their partners are less satisfied in the relationship (Dudley et al., 2001).

Taken together, these findings suggest that numerous individual, environmental, and relationship factors can incur risk to men and women during the postpartum period. While this body of findings has laid an important foundation for PPD research, there are several limitations to this research. First, as noted above, these studies often do not include partners; rather they consider only women's PPD. Second, these investigations often focus on *prenatal* predictors of PPD. While understanding how prenatal factors

predict PDD is valuable, it is also imperative to understand how parents change and adapt once their child has arrived, and how their *postpartum* functioning may influence their distress during this challenging time.

Finally, although risk factor research suggests that both individual and relationship factors must be considered when predicting PPD, most investigations have not considered them simultaneously. PPD likely does not arise from a single factor, and to explicate this phenomenon fully requires a more nuanced understanding of how or why multiple factors come together to predict PPD. That is, it is imperative that research go beyond identification of single risk factors and instead examine multiple factors simultaneously, including mediators and/or moderators, in order to better understand how and why various factors may together impact PPD. In particular, it is important to understand how individual functioning and relationship functioning impact one another and together relate to PPD.

Relationship functioning and individual functioning are often tightly intertwined, such that how a person is functioning individually influences relationship satisfaction and adjustment, and relationship functioning in turn influences individual adjustment (e.g., Epstein & Baucom, 2002). For example, relationship distress and depression are often comorbid. Up to 50% of distressed relationships include at least one depressed partner (Beach & Gupta, 2003). Moreover, partners who are dissatisfied in their relationship are three times more likely to develop depression within one year than non-dissatisfied partners (Whisman & Bruce, 1999). Specific negative relationship events, such as infidelity, threats of relationship dissolution, and physical abuse also predict depression (Beach, Dreifuss, Franklin, Kamen, & Gabriel, 2008). Although most research regarding

relationships and depression focus on major depressive disorder (MDD) rather than PPD, there is some evidence that PPD and relationship adjustment interact in a reciprocal fashion, such that relationship adjustment influences the onset and maintenance of PPD, and PPD in turn alters relationship adjustment (Mamun et al., 2010). These findings suggest that individual and relationship functioning are associated, and that consideration of the links between individual and relationship functioning may help explicate the development of PPD.

To better understand and aid couples confronting PPD, the current study built on previous research by exploring how individual factors (in this case, role functioning in multiple domains) *and* the couple's relationship adjustment come together to predict PPD in both partners. In particular, this study examined how role quality (including role intensity and role acceptability), work-family strain, and work-family gains (i.e., benefits which come with combining multiple roles) in the postpartum period relate to PPD, and whether this association is partially explained by the impact that role functioning has on relationship functioning. That is, it was postulated that individuals with worse role functioning in the postpartum period (i.e., poorer role quality, greater work-family strain, and fewer work-family gains) would be more apt to experience PPD. It was predicted that this would be partially explained by relationship adjustment; that is, individuals with worse role functioning would experience poorer relationship adjustment, and poorer relationship adjustment in turn would contribute to PPD. This study examined these important factors in *both* men and women.

Relationship Adjustment/Satisfaction and PPD

Although PPD is typically considered an individual phenomenon, it often occurs in a couple context, and understanding that context is important for fully understanding and treating PPD. Although the couples and PPD literature is still in its infancy, poor overall marital adjustment or quality is consistently cited as one of the top risk factors for PPD. As expected, women who experience less satisfaction or worse overall adjustment in their relationship during pregnancy are at greater risk for developing PPD (Beck, 2001; Robertson et al., 2004), and this is true regardless of when assessments of PPD take place in the postpartum period (O'Hara & Swain, 1996). Additionally, concurrent marital dissatisfaction is associated with PPD (e.g., Hock, Schirtzinger, Lutz, & Widaman, 1995). Moreover, lack of marital adjustment predicts a more severe and chronic PPD course (Beck, 2001; Campbell et al., 1992; McMahon et al., 2005; Patel et al., 2002). It is important to note, however, that many studies of relationship adjustment or satisfaction do not include both partners and generally examine prenatal relationship adjustment. Still, these findings suggest that lower levels of relationship adjustment or satisfaction do predict PPD. Additional support for the notion that relationship functioning may impact PPD is the finding that partners' PPD is often comorbid (e.g., Edhborg et al., 2005). One interpretation for this PPD comorbidity across partners is that dyadic factors influence both partners' levels of individual distress.

Research to date has not explicated exactly how or why relationship adjustment relates to PPD. However, poor relationship adjustment (marked by indicators such as conflict or violence) has been conceptualized in the broader couple literature as being a chronic stressor for individuals (Epstein & Baucom, 2002). The chronic stress of poor

prenatal or postpartum relationship functioning may compound the demanding nature of having a child. Conversely, positive relationship adjustment may provide protection for individuals, decreasing their likelihood of developing PPD. For instance, social support from one's partner has been found to have a protective or buffering effect during times of stress (Cohen & Wills, 1985). Thus, relationships may either create, exacerbate, or buffer stress, depending on the quality of the relationship.

Roles and Relationship Functioning

Various aspects of role functioning impact relationship adjustment. Support for this notion comes primarily from research on the transition to parenthood (TTP), the developmental stage in which a couple's first child enters the family system (Lawrence, Rothman, Cobb, & Bradbury, 2010). A primary and consistent finding within the TTP literature is that couples' relationship satisfaction, on average, deteriorates following the birth of their first child (e.g., Doss et al., 2009). Additionally, specific relationship processes decline in quality, such as relationship confidence (one's belief that they and their partner are able to "manage their relationship and stay together"), relationship dedication, and conflict management (Doss et al., 2009). Moreover, couples may experience an increase in negative communication, including withdrawal, denial, conflict, dominance, and negative affect (Doss et al., 2009). In general, research has suggested that positive behaviors decline and negative behaviors between partners increase during the TTP (Lawrence et al., 2010).

Role changes are one factor that has been proposed to contribute to this deterioration in couple functioning with the birth of a child. Although most households are largely egalitarian prior to the TTP, both divisions of labor and psychological

investment in roles become more traditional after the birth of the first child (Koivunen, Rothaupt, & Wolfgram, 2009; Lawrence et al., 2010; Glade, Bean, & Vira, 2005; MacDermid, Huston, & McHale, 1990). For example, men become more psychologically involved in their work role while women become less psychologically involved in their work role (Cowan & Cowan, 1988). Moreover, while both partners tend to increase their investment in their parental role and decrease their investment in their partner, women show greater increases in their parental role as well as greater decreases in their partner role compared to men. Additionally, women tend to carry the majority of household responsibilities (e.g., Krieg, 2007). Also, although most literature examining shifting roles in parents has focused on the birth of a first child, there is some evidence that second-time parents undergo similar changes (Katz-Wise, Priess, & Hyde, 2010). It should be noted, however, that lesbian couples tend to divide household tasks equally, although there is a tendency for the biological parent to take a greater role in childcare (Goldberg & Perry-Jenkins, 2007).

Shifts towards more traditional sex roles in the postpartum period are not necessarily deliberate or explicitly decided upon by couples (Glade et al., 2005) and may be problematic for relationships. For instance, shifting roles may lead to resentment and withdrawal from both partners (Glade et al., 2005). Additionally, as traditionalism increases, women's ratings of positive aspects of their relationship decrease from pregnancy to three months postpartum (Belsky, Lang, & Huston, 1986). The degree to which the division of labor may be problematic is likely determined both by the objective division itself, as well as a subjective sense of the division. For instance, lower levels of men's involvement in family tasks (actual behavioral involvement) during the TTP are

associated with higher levels of relationship conflict and lower levels of satisfaction for women (Cowan & Cowan, 1988; Glade et al., 2005). Also, satisfaction with divisions of labor is associated with relationship satisfaction, such that higher levels of satisfaction with divisions of labor predict higher levels of relationship satisfaction (Cowan & Cowan, 1988). Additionally, women who regard themselves as less traditional or who hold expectations that labor will be divided equally with the addition of a child tend to be less satisfied and have more conflictual relationships than those who regard themselves as more traditional or who say their expectations are being met (Glade et al., 2005). Likewise, dyads who hold more traditional sex role attitudes yet have nontraditional divisions of labor experience more conflict during the TTP (MacDermid, Huston, & McHale, 1990). Finally, the perception that the level of partner involvement in household tasks is fair across the TTP is associated with higher levels of marital quality for women (Terry, McHugh, & Noller, 1991).

Although most of the literature on roles and couples has focused on the division of labor, another aspect of roles—role conflict (aka role overload or work-family strain)—has also been found to contribute to relationship adjustment during the TTP. Role conflict has several definitions, but the concept generally refers to an overall feeling of being overwhelmed by multiple roles (Perry-Jenkins, Goldberg, Pierce, & Sayer, 2007) or the perception that multiple roles are somehow incompatible with one another, whether because of time, actual incompatibility of behaviors, or strain/stress spillover between roles (Greenhaus & Beutell, 1985). Using the first definition, higher levels of role conflict/work-family strain has been found to be associated with higher levels of relationship conflict during the TTP (Perry-Jenkins, 2007).

Overall, it appears that couples tend to become more traditional when a child is added to the family unit, and this shift in roles is often associated with poorer relationship functioning. The impact on relationship functioning is likely via both the objective degree of involvement in roles as well as a subjective sense of whether role involvement is acceptable and meeting one's expectations. Role conflict or work-family strain also appears to impact relationship functioning.

Roles and PPD

The impact of roles on PPD has not been studied as extensively as the impact of roles on relationship functioning in the TTP. However, various aspects of role functioning do appear to impact PPD. It should first be noted that multiple aspects of role functioning have been studied such as role occupancy (quantity of roles), role quality (the nature of roles, which may include role intensity or degree of role involvement, acceptability of and control over roles, role satisfaction, or the ratio of rewards to concerns within roles), role conflict or work-family strain (defined above), and family-work gains (the perception that one is benefiting from multiple roles, such as the perception that one is more well-balanced and able to use more of one's talents from participating in multiple roles). The degree to which these have been examined varies, but preliminary evidence suggests that worse role functioning is predictive of higher levels of PPD.

Although there is a dearth of research on divisions of labor postpartum and their relation to PPD, some evidence indicates that more traditional divisions of labor may contribute to PPD. Research on depression (not PPD specifically) and division of labor suggests that depressed women are more dissatisfied with the distribution of household

and childcare tasks than non-depressed women, and this association is partially mediated by marital distress (Whisman & Jacobson , 1989). More traditional labor divisions postpartum are also linked to women's distress (Des Rivières-Pigeon, Saurel-Cubizolles, & Romito, 2002). In addition, violation of expectations regarding childcare divisions is associated with women's PPD (Goldberg & Perry-Jenkins, 2004). Divisions of labor may directly contribute to PPD by forcing women to carry the majority of the workload associated with the new family shift. Yet, traditional divisions may also have an indirect effect on PPD via their impact on relationships, consistent with the finding that labor divisions and depression are partially mediated by marital distress (Whisman & Jacobson, 1989). That is, depressed women are more dissatisfied with the division of household tasks than non-depressed women. However, this association is partially explained by the fact that greater role dissatisfaction is associated with worse relationship functioning for women, which in turn is associated with depression. Therefore, divisions of labor may impact relationship adjustment, which in turn can impact PPD.

In addition to the division of labor, a few studies have examined aspects of role conflict (i.e., role overload or work-family strain) and PPD. Role overload has been found to predict depression in couples during the TTP (Perry-Jenkins et al., 2007). Additionally, higher levels of both home-to-job and job-to-home spillover predict worse mental health for women (Grice, McGovern, Alexander, Ukestad, & Hellerstedt, 2011). Finally, job-family conflict predicts depressive symptoms in working postpartum mothers (Marshall & Tracy, 2009). A related but positively termed concept, work-family gains, has been introduced in the role literature (Marshall & Barnett, 1993) but has not yet been examined in relation to PPD. It is likely that whereas role conflict predicts worse

functioning, higher levels of work-family gains would be associated with better functioning (i.e., less distress).

Although several studies have examined role-conflict, only one study was found which examined the effects of prenatal role quality on PPD (Hall & Long, 2007). This study examined two aspects of role quality including role intensity (how much time, energy, and responsibility are associated role tasks), and the degree to which a person finds their role involvement to be acceptable and under their control (which was termed "role disparity" in this study). Role conflict (termed role strain in this study) was also examined. Results indicated that prenatal role intensity and disparity for both men and women predict PPD for both partners, but role conflict does not. Thus, the more intense and more unacceptable couples found their roles to be prenatal, the more likely they were to be depressed postpartum. The lack of effect for role conflict is surprising but likely is a result of examining this factor during pregnancy, rather than during the postpartum period. Partners may be able to contend with role conflict prior to the addition of a new child, but role conflict may both increase and be more salient once the child is born.

Hall and Long's investigation represents an important first step in understanding how roles influence PPD. However, because the study examined prenatal role functioning during the TTP, it was not possible to examine the effects of the parent role on PPD. Additionally, assessment during the prenatal period means that role functioning was assessed prior to role changes which the TTP literature suggests occur after the birth of a child. Finally, although the measure of role quality assessed multiple domains (individual, work, partner/household), these various domains were not analyzed separately. Thus, the current study expanded on the findings from this previous

investigation by examining role quality (including role intensity and acceptability/control) during the postpartum period, and by attempting to analyze each domain separately to explicate the association between specific role domains and PPD.

Although investigations of postpartum role quality and PPD have not been conducted, several studies examining roles and general distress do support the notion that role quality may influence PPD. For instance, the balance of positives and negatives in the worker, wife, and maternal roles was related to depression in a sample of midlife women (Baruch & Barnett, 1986). Similarly, poor role quality (defined as the balance of rewards and concerns) in the work, parent, and partner roles has been associated with distress in men (Barnett, Marshall, & Pleck, 1992). Finally, higher levels of demands and lower levels of control over those demands have been associated with more psychological symptoms in women who occupy multiple roles (Piechowski, 1992).

Summary

Although the literature on roles and PPD is limited, the above literature suggests that several aspects of role functioning (including role intensity, acceptability of and control over roles, and role conflict or work-family strain) may impact PPD, such that worse role functioning (i.e., greater role intensity and work-family strain and less acceptability and control) is associated with greater PPD. Additionally, the TTP literature strongly suggests that role functioning in the postpartum period also influences relationship adjustment. Divisions of labor tend to become more traditional during the TTP, and both the actual divisions and the subjective sense of satisfaction with these divisions are associated with relationship adjustment. For example, lower levels of men's involvement in family tasks are associated with poorer relationship adjustment for

women (Cowan & Cowan, 1988; Glade et al., 2005), and satisfaction with labor divisions is associated with relationship adjustment for both partners (Cowan & Cowan, 1988). Greater role conflict also predicts worse relationship adjustment during the TTP. Thus, role functioning (including both the objective level of involvement in roles and the subjective sense of involvement, as well as role conflict) impacts *both* PPD and relationship adjustment. Relationship adjustment in turn is one of the most consistently cited risk factors for PPD.

The Current Study

The aim of the present investigation was to examine the associations among several aspects of postpartum role functioning, relationship adjustment, and PPD in both men and women. The above literature suggests that several aspects of role functioning in the postpartum period may impact PPD. For instance, poorer role quality (i.e., greater role intensity and greater unacceptability of roles) may make it more likely that an individual will experience PPD. Additionally, even if role quality is generally acceptable, individuals may find fitting multiple roles together difficult or stressful, and this experience of role conflict (termed work-family strain in the present study) may also be associated with greater PPD. On the other hand, individuals may perceive benefits or gains from participating in multiple roles (such as feeling more well-balanced or that one's talents are being fully utilized). Although only work-family strain, not work-family gains, has been studied thus far, it was predicted that the perception of work-family gains would be associated with less PPD.

In addition to these direct effects of role functioning on PPD, it was anticipated that individual role functioning would impact relationship adjustment, which in turn would impact PPD. The TTP literature suggests that couples become more traditional during the TTP, and that both the actual labor divisions (e.g., degree to which husbands are involved in family tasks) and the subjective sense of satisfaction with role divisions impact relationship adjustment. Thus, while the objective and subjective aspects of role quality noted above (i.e., role intensity and acceptability/control) have not been examined

relative to relationship adjustment, it was anticipated that they would impact relationship adjustment, such that greater role intensity and greater unacceptability (i.e., poorer role quality) would each predict poorer relationship adjustment. It was also expected that greater work-family strain and less work-family gains would predict poorer relationship adjustment. In turn, it was expected that poorer relationship adjustment would predict greater PPD, given the consistent finding that relationship adjustment is one of the top risk factors for PPD.

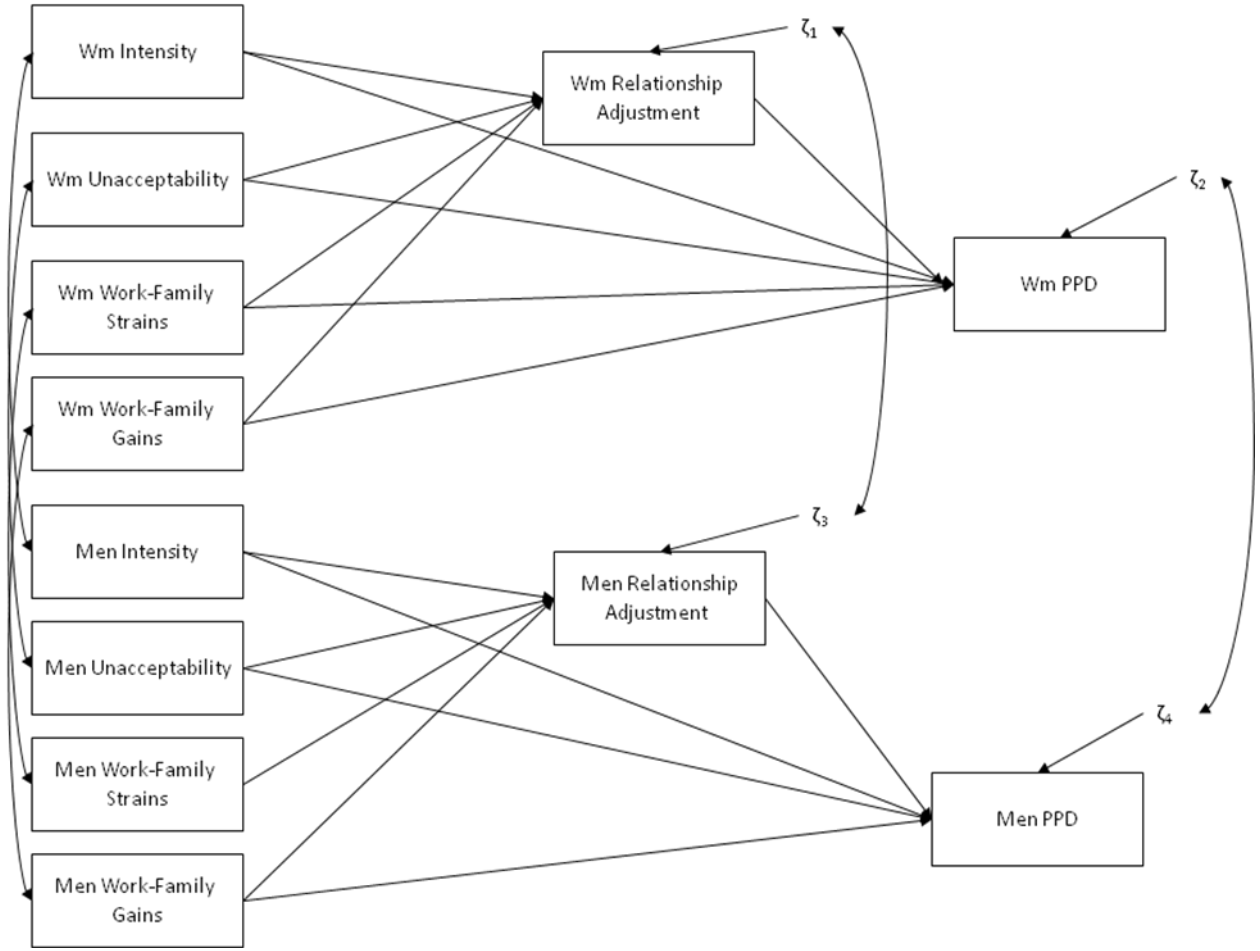
This study addressed several limitations in the current literature. First, research to date has focused largely on predicting PPD from prenatal risk factors, whereas this investigation examined roles during the postpartum period. Examination of roles during this timeframe is imperative, given the vast literature suggesting that roles change *after* the birth of a child. Second, past literature has tended to focus on only one or two aspects of roles at a time (e.g., role conflict), and has not examined a potentially important role related factor, work-family gains. Moreover, the only study found on prenatal role quality and PPD was unable to examine the parental role and did not examine the effects of domain-specific role quality (e.g., roles related to household tasks or childcare specifically). The current study examined roles in a more thorough and nuanced way by examining several aspects of roles simultaneously (including work-family gains), and then examining the effects of roles within specific domains. Third, both men's and women's PPD were examined, rather than only women's PPD. Finally, rather than examining only the effects of individual functioning (i.e., roles) or only relationship adjustment on PPD, this study examined both aspects simultaneously to better understand how individual and relationship factors together influence PPD.

In sum, the overarching purpose of this investigation was to examine whether several aspects of roles contribute to both men's and women's experience of PPD and the degree to which this is mediated by relationship adjustment. Based upon the above findings, several hypotheses were posited, described below.

Hypotheses

Hypothesis 1 (see figure 1). Various aspects of roles, such as role quality (i.e., role intensity and acceptability/control) and work-family strain have been found to contribute to individuals' well-being. Another aspect of role functioning, work-family gains, has not been examined in relation to PPD but was expected to lessen the chance of developing PPD. It was hypothesized that these four aspects of roles would each be related to PPD, such that higher levels of postpartum distress would be predicted by (a) higher levels of role intensity (i.e., more time, effort, and responsibility invested in roles), (b) higher levels of unacceptability (i.e., feeling that one's current level of participation in roles is unacceptable and/or out of one's own control), (c) higher levels of work-family strain (i.e., perception that multiple roles are incompatible or a general feeling of being overwhelmed by multiple roles), and (d) lower levels of work-family gains (i.e., lessened perceptions that the combination of work and family roles provides benefits such as being well-rounded). These associations were hypothesized to be partially mediated by

Figure 1. Proposed Conceptual Mediational Model of Roles, Relationship Adjustment, and Postpartum Distress



relationship adjustment; that is, it was expected that poorer role functioning would predict lower relationship adjustment, which in turn would predict higher levels of PPD. Although it was expected that lower relationship adjustment would partially account for the association between poorer role functioning and PPD, poorer role functioning was also predicted to have a direct effect on PPD. These associations were predicted to hold true for both men and women.

Hypothesis 2 (see figures 2, 3, and 4). Studies have typically not examined how domain-specific role quality may influence postpartum distress, yet various domains may have a differential impact on PPD. Two models were originally proposed to examine domain-specific role quality, one for role intensity (see Hypothesis 2a below) and one for role acceptability (see Hypothesis 2b below). However, as discussed in further detail in the data analysis and results sections below, factor analyses of the role intensity and acceptability measure used for the present study did not support the creation of subscale scores. Thus, while it was possible to examine Hypothesis 1 as proposed (which used only full scale scores), it was not possible to examine Hypothesis 2 (which required the creation of domain-specific subscale scores) using the proposed measure.

However, another measure that was originally included in the study for descriptive purposes only was utilized as a proxy for this hypothesis. This measure is described in further detail in the measures section and examines role involvement (akin to role intensity) and satisfaction (akin to role acceptability) in three domains (household tasks, childcare tasks, and family decision-making). Therefore, Hypothesis 2 was revised (see Revised Hypothesis 2 below) to discuss role involvement and role satisfaction in these three domains rather than role intensity and role acceptability in the five proposed

Figure 2. Proposed Conceptual Mediational Model of Role Intensity, Relationship Adjustment, and Postpartum Distress

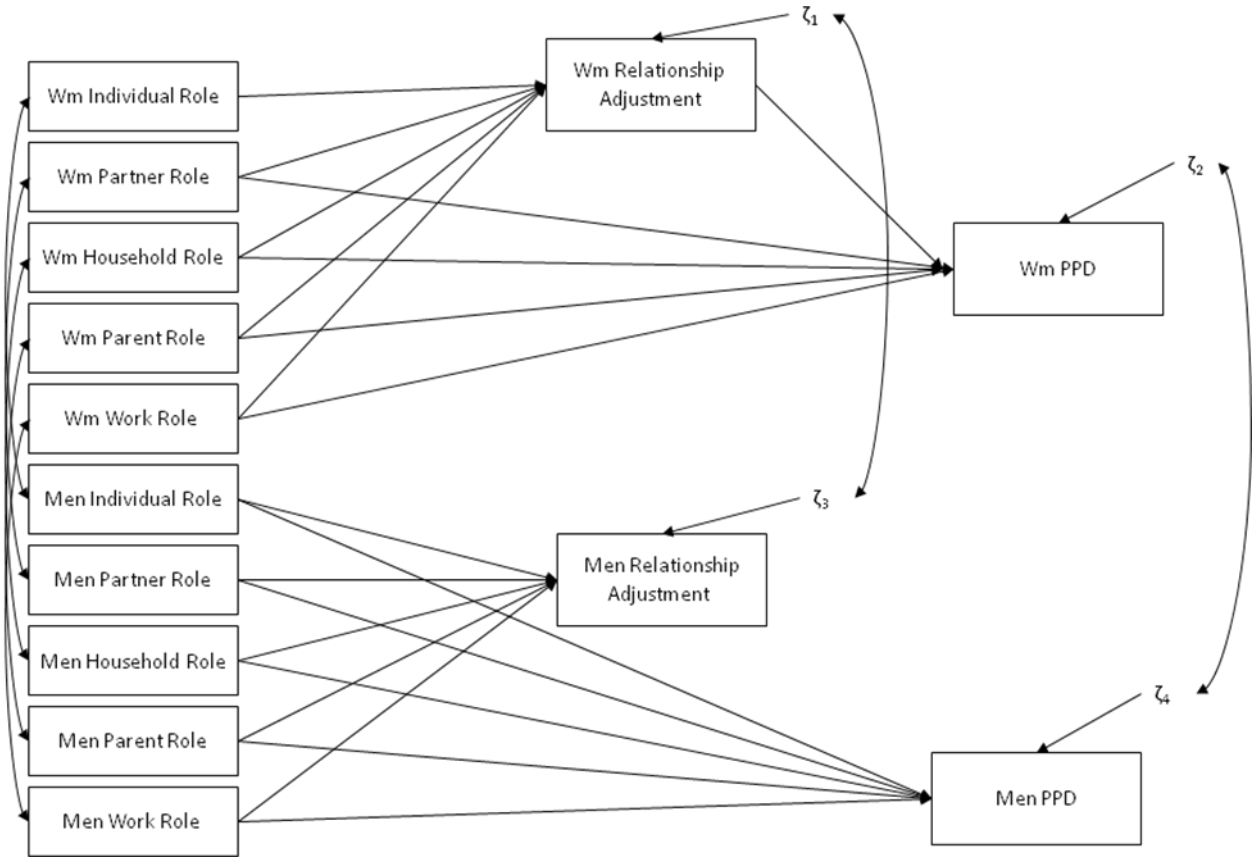


Figure 3. Proposed Conceptual Mediational Model of Role Unacceptability, Relationship Adjustment, and Postpartum Distress

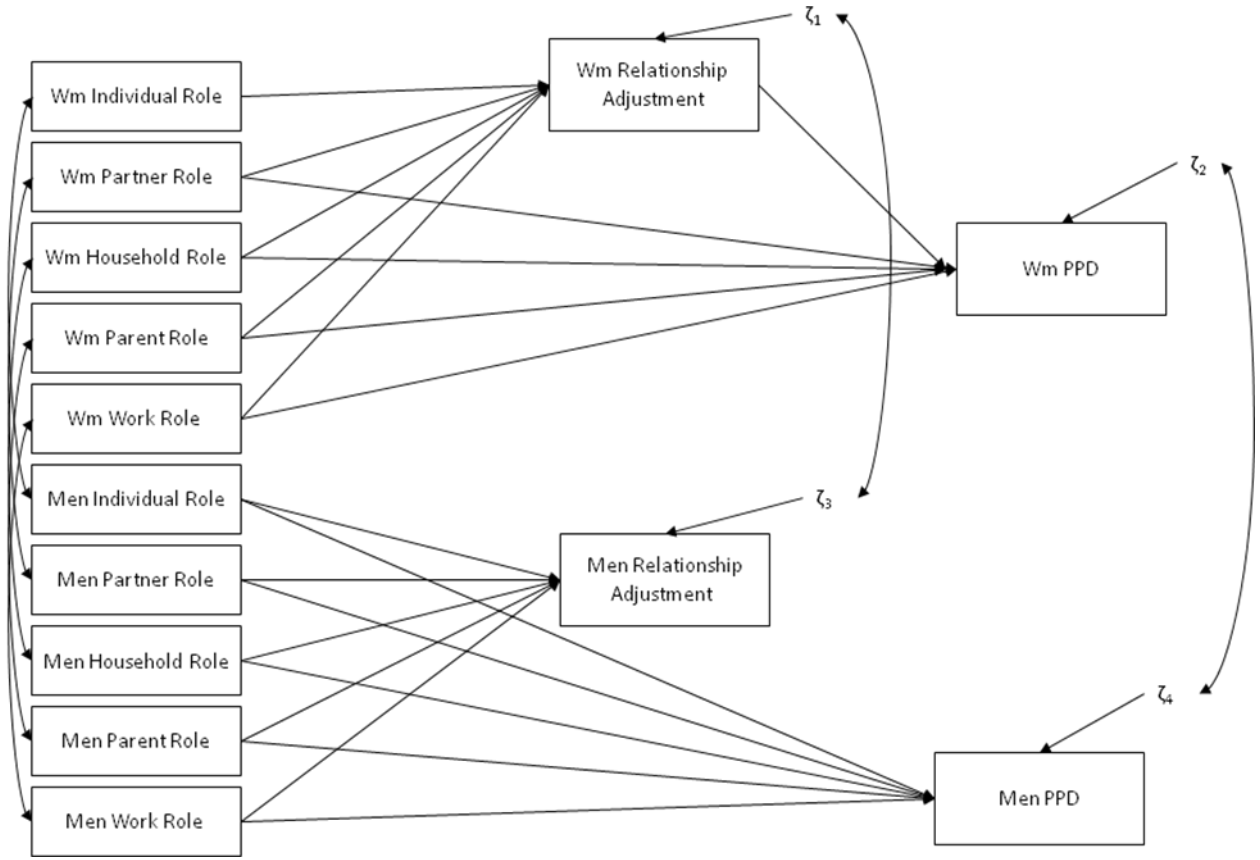
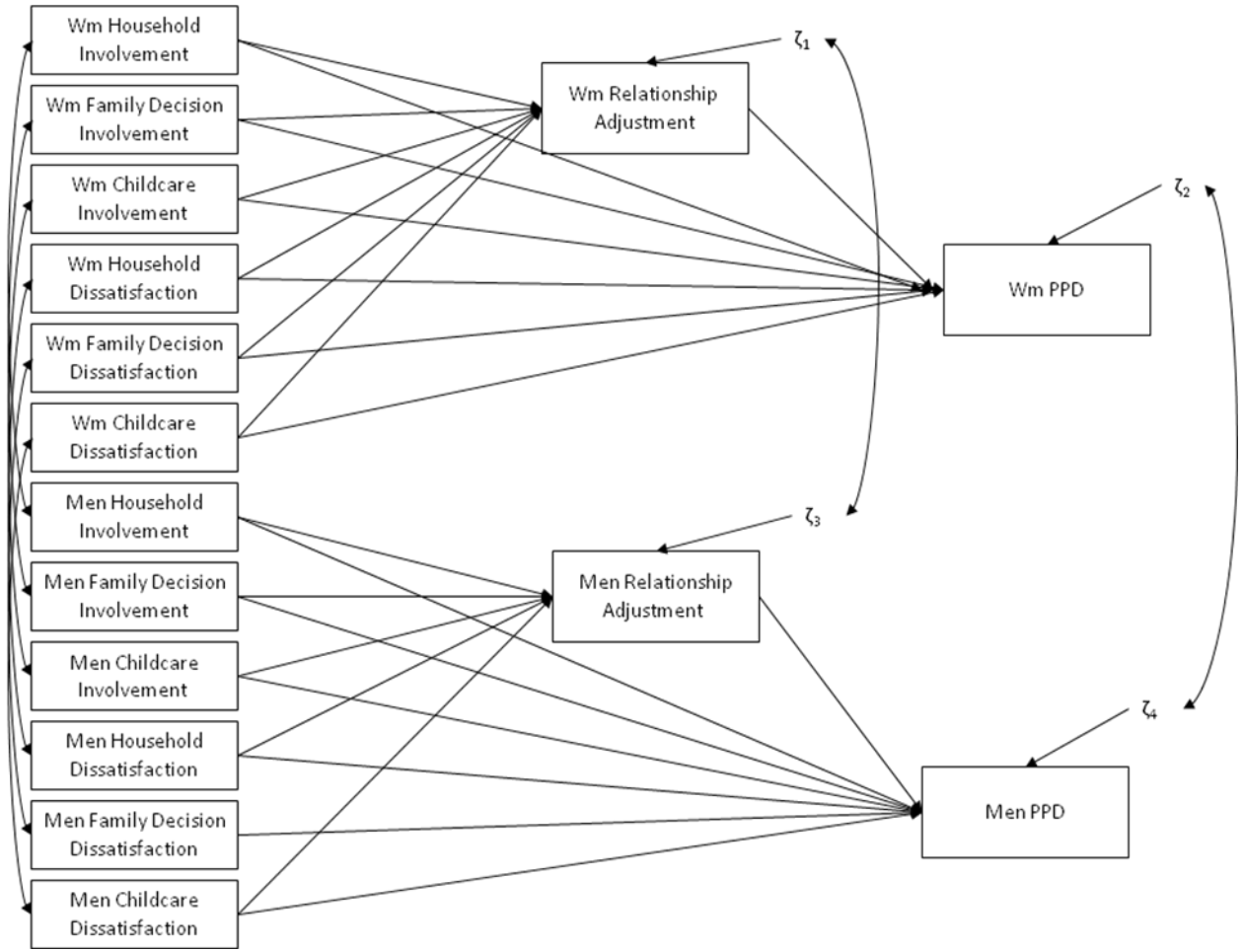


Figure 4. Proposed Conceptual Mediational Model of Role Involvement and Role Satisfaction, Relationship Adjustment, and Postpartum Distress



domains (individual, partner, parent, work, and household). One advantage of using this alternate scale is that whereas analysis of domain-specific role intensity and acceptability required two separate models, role involvement and satisfaction could be examined within a single model. This is because ten independent variables (i.e., five domains for role intensity and five domains for acceptability) would have been too complex of a model to converge given the proposed sample size, but six independent variables (i.e., three domains for role involvement and three domains for role satisfaction) was possible given the obtained sample size. Fewer models is always preferable when model-fitting, making utilization of this scale advantageous. Note that given that previous empirical literature has not examined role quality in specific domains, the hypothesized directions of effects discussed below were based on the investigator's broader knowledge of couple functioning.

Hypothesis 2a (see figure 2). It was originally hypothesized that higher levels of role intensity in three domains (work, parent, and household) would all predict higher levels of postpartum distress. In contrast, higher levels of intensity in partner and individual domains (i.e., higher levels of time and energy devoted to oneself and one's partner) were expected to predict lower levels of postpartum distress. This was expected because individuals often have less time available to devote to themselves and their partners during the postpartum period, and maintaining involvement in these domains may be beneficial for individuals and their relationship. As in model 1, these associations were expected to be partially mediated by relationship adjustment, such that poorer role functioning (i.e., higher intensity in the work, parent, and household domains, and lower intensity in individual and partner domains) would predict lower relationship adjustment,

which in turn would predict higher levels of PPD. Although it was expected that lower relationship adjustment would partially account for the associations between role intensity in each domain and PPD, role intensity in each domain was expected to have direct effects on PPD as well. These associations were predicted to hold true for both men and women.

Hypothesis 2b (see figure 3). It was originally hypothesized that higher levels of unacceptability would be associated with higher levels of postpartum distress, regardless of domain. Thus, the perception that one's level of involvement in various roles (including work, partner, parent, household, and individual) is unacceptable and not within one's own control was predicted to be associated with higher levels of PPD. These associations were predicted to be partially mediated by relationship adjustment, such that higher levels of unacceptability would predict lower relationship adjustment, which in turn would predict higher levels of postpartum distress. Although it was expected that lower relationship adjustment would partially account for the associations between less acceptability/control in each domain and PPD, unacceptability in each domain was expected to have a direct effect on PPD as well. These associations were predicted to hold true for both men and women.

Revised Hypothesis 2 (see figure 4). The same overall pattern described above was expected using the proxy measure. More specifically, it was hypothesized that higher levels of role involvement in two domains (childcare and household tasks) would predict greater PPD. In contrast, higher levels of involvement in family decision-making were expected to predict lower levels of PPD. This was expected based on the general depression literature which suggests that lack of control and predictability are associated

with depression; thus, greater decision-making involvement (i.e., greater control of family decisions) was expected to predict less PPD. Additionally, it was hypothesized that lower levels of role satisfaction would be associated with higher levels of PPD, regardless of domain. All of these associations were expected to be partially mediated by relationship adjustment, such that poorer role functioning (i.e., higher role involvement in childcare and household tasks, lower role involvement in family decision-making, and lower satisfaction in all domains) would predict lower relationship adjustment, which in turn would predict higher levels of PPD. These associations were predicted to hold true for both men and women.

Exploratory Objectives. In addition to the above hypotheses, an exploratory aim of this study was to determine whether one partner's role functioning would predict the second partner's PPD, and whether that would be mediated by that second partner's relationship adjustment. For instance, would men's role functioning predict women's PPD and would that be partially explained by the impact of men's role functioning on women's relationship adjustment. Thus, each of the proposed models was examined within person, as described above, and then was re-examined across partners. These cross-partner associations were examined in an exploratory way, without a prior hypotheses regarding directionality, given literature to date has focused on within partner associations rather than cross-partner associations.

Summary. In summary, the present investigation explored two main aims. The first aim was to determine whether several important aspects of role functioning (i.e., role intensity, role acceptability, work-family strain, and work-family gains) predict PPD, and whether this association is partially mediated by relationship adjustment. It was

hypothesized that greater role intensity, role unacceptability, and work-family strain, as well as less work-family gains, would be associated with greater PPD, and that this would be partially mediated by relationship adjustment. The second aim was to determine whether the degree of actual contribution to roles (i.e., role intensity or role involvement) and the subjective sense of acceptability or satisfaction with these roles (i.e., role acceptability or role satisfaction) within *specific* domains (e.g., childcare or household tasks) predict PPD and whether this association is partially mediated by relationship adjustment. The revised and final hypothesis regarding this aim was that that poorer role functioning (i.e., higher role involvement in childcare and household tasks, lower role involvement in family decision-making, and lower satisfaction in all domains) would predict higher levels of PPD, and this would be partially mediated by relationship adjustment. The final aim of this study was to examine cross-partner associations between one partner's role functioning and the other partner's relationship adjustment and PPD. This aim was exploratory in nature and therefore no a priori hypotheses were made.

Methods

Participants

Eighty-three postpartum couples were recruited for this study from an area medical facility and the community at large. Of these, 73 couples completed the survey. Nine more women completed the survey, but their male partner either did not complete the survey (*n*=7), or they were excluded from analyses because they began but did not complete the survey (*n*=2). Finally, one woman did not complete the survey and her male partner completed demographics only and was therefore not included in analyses. Schumacker and Lomax (1996) note that a common rule of thumb for determining adequate sample size in path analysis (the primary statistical method used in this study) is to have between ten and twenty participants per observed variable. Given that the largest model in the current study utilized eight variables, the current sample size was deemed adequate to test the study's hypotheses.

To be eligible for this study, both members of the couple were required to be at least 18 years old, speak English, and be willing to participate. They had to be married or living together in a committed relationship for 12 months or more. Couples were required to be heterosexual, given the study variables may operate differently for homosexual couples. Couples were between four and twelve weeks postpartum to ensure that couples would have time to begin adaptation to their new roles. It was not necessary for this to be the couple's first child for them to participate. Finally, couples could not currently be in couples counseling.

Of the women, 89.0% were white; 1.2% were African-American; 3.7% were Asian or Pacific Islander; 3.7% were Hispanic; 1.2% were Native American; and 1.2% indicated "other" for their race. Of the men, 86.3% were white; 2.7% were African-American; 1.4% were Asian or Pacific Islander; 5.5% were Hispanic; and 4.1% indicated "other" for their race. Women's ages ranged from 23 to 39 years with a median age of 31; men's ages ranged from 23 to 51 with a median age of 33. Women had a median education level of 18 years (i.e., masters level), and education ranged from 12 to 24 years. Men had a median education level of 17 (i.e., some graduate school), and education ranged from 12 to 28 years. Couples' household income ranged between (a) under $5,000 and (b) over $250,000, with a median income range of $75,000 to $99,999. Of the women, 54.9% reported currently working, and 90.3% of the men reported currently working.

Couples had been married or living together in a committed relationship between 1 and 13 years with a median of 5 years. Of the women, 68.3% reported having one child; 25.6% reported having two children; 4.9% reported having three children; and 1.2% reported having seven children. Of the men, 71.2% reported having one child; 24.7% reported having two children; and 4.1% reported having three children. Of the women, 7.3% reported currently being diagnosed with depression; 25.6% reported being diagnosed with depression in the past; and 11% reported a lifetime diagnosis of an anxiety disorder. Of the men, 1.4% reported currently being diagnosed with depression; 9.6% reported being diagnosed with depression in the past; and 12.3% reported a lifetime diagnosis of an anxiety disorder.

Measures

Both partners were asked to complete a set of self-report measures, described below. Three measures of role functioning provided data on role intensity, role unacceptability, work-family strain, work-family gains, and relative role involvement and satisfaction. These measures were used to predict scores on a measure of PPD. Finally, a measure of relationship adjustment was included to test as a partial mediator of the effects of roles on PPD.

Demographics. For descriptive purposes, study participants were asked questions regarding their age, race, gender, yearly individual and joint income, highest level of education attained, length of relationship, and number of children (including the infant which was recently delivered). In addition, participants were asked questions related to current and previous depression or anxiety diagnoses as well as current mental health treatment they may be receiving.

Role quality. Role quality was assessed via the Role Enactment Questionnaire (REQ; Hall, 1993). The REQ assesses two aspects of role quality, including role intensity (i.e., time, energy, and responsibility, where responsibility refers to organizing and planning) and acceptability and control (referred to as "role disparity" in this measure, but called "acceptability" in the current study). The REQ has 126 items in four role domains: individual, parent, partner, and work. The partner domain contains four items regarding the partner per se, and the remaining items pertain to household tasks. The items pertaining to household tasks were separated from the partner items and were considered a fifth domain in the present study. Each item contains three parts: participants are asked to rate their level of involvement (time or energy) in a task, how

acceptable this is to them, and either (a) how much their level of involvement is under their control or (b) how much responsibility they have for this role (depending on which question is appropriate for the particular task listed). For example, one item asks participants to rate, "The amount you bathe your children," "How acceptable is this to you?" and "How much responsibility do you take for this?" Participants rated each of these questions from 1-5, where 1 means "not/none" and 5 means "a great deal/very." The intensity score represents the sum of time/energy and responsibility items (67 items for a possible range 67 to 335); the acceptability score represents the sum of acceptability items (reverse scored; 59 items for a possible range 59 to 295). Thus, higher scores reflect worse role quality (higher intensity and more unacceptability) on both measures. Domain-specific scores were also calculated and utilized in a series of factor analyses to determine whether domain-specific models were feasible. That is, intensity and acceptability scores were calculated for the work, partner, parent, household, and individual domains. Internal reliability for both scales are high (intensity α = .89; acceptability/control α = .90; Hall, 1993).

Work-family strain & gains. To assess work-family strain and gains, the Work-Family Gains and Strains Scale was used (Marshall & Barnett, 1993). The work-family gains subscale contains seven items and assesses gains one may experience from involvement in both work and family roles. Examples include, "having both work and family responsibilities makes you a more a well-rounded person," and "gives your life more variety." Participants rated each item from 1-4, where 1 indicates "not at all true" and 4 means "very true." The work-family strain (i.e., conflict) subscale consists of seven stress-spillover items (e.g., "When you spend time with your family, you're bothered by

all the things at work that you should be doing,") rated on a scale from 1-4, where 1="not at all true" and 4= "extremely true." This scale also includes two items of multiple role overload (e.g., "how often do things you do add up to being just too much?"). These also were rated from 1-4, where 1 = "never" and 4 = "very often." Work-family gains and strains subscale scores were each calculated by summing the items within the subscale. Therefore, the possible range for the gains subscale was 7-28, and the possible range for the strains subscale was 9-36. Internal reliabilities for each subscale are adequate with the gains subscale (α = .85 for men; α = .86 for women) being slightly higher than the strains subscale (α = .75 for men; α = .80 for women; Marshall & Barnett, 1993).

Relationship adjustment. Relationship adjustment was measured using the 32 item Couples Satisfaction Index (CSI(32), Funk & Rogge, 2007). Example items include "Please indicate the degree of happiness, all things considered, of your relationship" and "I still feel a strong connection with my partner." Each item is rated from 0-5, with the exception that one item is rated from 0-6. Scores were summed for a satisfaction score (the possible range is 0-161), where higher scores represent higher levels of satisfaction. The distress cut score is considered 104.5. Internal reliability for the CSI(32) is high (α = .98), and this instrument has demonstrated good construct validity, correlating highly with other well-validated measures of marital adjustment (e.g., Dyadic Adjustment Scale, r = .91; Funk & Rogge, 2007). In addition, the CSI demonstrates higher levels of precision and power in the assessment of relationship adjustment than other measures of relationship adjustment.

Postpartum distress. Postpartum distress (i.e., depressive and anxiety symptoms) were assessed using the 10-item Edinburgh Postnatal Depression Scale (EPDS; Cox,

Holden, & Sagovsky, 1987). Although entitled a depression scale, seven of the items correspond to depressive symptoms, and three items represent anxiety symptoms. Examples include "I have been able to laugh and see the funny side of things," and "I have been anxious or worried for no good reason." Each item has four response choices, which correspond to scores of 0-3. Seven of the items (all but items 1,2, and 4) are reversed scored, and the scale score is then calculated by summing (possible range: 0-30). The cut score for potential depression is 10. Internal reliability for the EPDS is high (α = .87), as is the split-half reliability (.88; Cox et al., 1987). In addition, the sensitivity is 86% and specificity is 78%. The EPDS has also been validated to be used with men (Matthey, Barnett, Kavanagh, & Howie, 2001).

Division of household/parenting roles. Originally for descriptive purposes only, couples' division of household and childcare tasks, and satisfaction with these divisions, were assessed using the "Who Does What?" scale (WDW; Cowan & Cowan, 1988). This instrument assesses partners' *relative* contribution to tasks, as well as desired contribution, in three domains: household tasks, family decision making, and the caring and rearing of children. The WDW scale contains 12 items for the household and decision-making domains, and 24 items in the childcare domain. Each item contains two ratings, "How it is now" and "How I'd like it to be." These are rated from 1-9, where 1 indicates that the woman does it all; 9 indicates that the man does it all, and 5 indicates that both contribute to that task equally. Relative role involvement within each domain was calculated by averaging scores on "How it is now" within that domain. Role satisfaction scores were calculated for each domain by averaging the absolute discrepancies between the "How it is" and "How I'd like it to be" ratings. Thus, higher

scores reflect greater discrepancies and therefore more dissatisfaction. Correlations between both partners' item ratings are r = .72-85 for the household and childcare scales, and r = .35 to .42 for decision-making (Cowan & Cowan, 1988).

Procedure

Several methods were used to recruit couples for this study. First, UNC mass emails were sent to UNC students, staff, and faculty to ensure that a wide sample of postpartum couples (that is, not only highly distressed couples) was recruited. A second method of recruitment included posting fliers at both medical center (UNC and student health) and community center locations. Third, mental health care providers at the Perinatal Mood Disorder clinics at UNC Hospitals presented potentially eligible patients a one-page letter describing the study and detailing contact information for the Couples Lab. Finally, research assistants (RA) directly recruited participants at the Perinatal Mood Disorder Clinic, upon referral from one of the mental health care providers at that clinic. In each case, couples who were currently eligible or who would be eligible soon but were not yet 4-12 weeks postpartum were encouraged to call or email the Couples Lab and speak to a research assistant (RA).

When contacted, RAs provided basic information about the study, answered questions, ensured that couples were eligible, gathered contact information, recorded the date of delivery, and explained the next steps to the couple. If the couple was not yet eligible, the RA informed the couple that they would contact them one week prior to their eligibility to ensure they were still interested and provide the questionnaire to the couple.

Couples were then sent an email from Qualtrics with an individualized link to the survey. Each partner was sent their own link to their own email account. Both the

informed consent and questionnaires were completed via Qualtrics. Upon completion of the survey, couples were mailed a thank-you letter and a $25 Target gift card as payment for their participation. These procedures were approved by UNC's Institutional Review Board.

Data Analysis

Prior to testing the study's main hypotheses, several preliminary analyses were conducted. First, means and standard deviations for all the main study variables were obtained, and paired sample *t*-tests were conducted to determine whether men and women differed, on average, in their experience of roles, relationship adjustment, and PPD. In addition, correlation matrices including all study variables were obtained for both women and men; a correlation matrix examining *cross-partner* associations among the main study variables was also utilized.

Next, a series of both confirmatory factor analyses (CFA) and exploratory factor analyses (EFA) of the Role Enactment Questionnaire (REQ) were conducted to determine whether the underlying structure of the REQ supported the creation of domain-specific subscale scores for use in evaluating Hypothesis 2. Several commonly employed model fit indices were utilized. Adequate model fit is typically indicated by a non-significant chi-square (Schumacker & Lomax, 2004); Tucker Lewis Index (TLI; Tucker & Lewis, 1973) and Comparative Fit Index (CFI; Bentler, 1990) values larger than .95; and Root Mean Square Error of Approximation (RMSEA; Steiger & Lind, 1980) values between .05 and .06 (Hu & Bentler, 1999).

Finally, the main hypotheses of the study were tested using path analysis. All models were estimated using MPLUS Version 6.1 (Muthén & Muthén, 2008) and the

maximum likelihood (ML) estimator. Length of marriage, number of children, history of depression, and history of an anxiety disorder were used as control variables. The significance of all parameter estimates was examined using bootstrap 95% confidence intervals. Because the final models in the current study were saturated models (i.e., all possible paths were estimated), fit indices (described above) did not provide any information that could be used to evaluate the fit of the model. However, the R^2 for PPD and relationship adjustment were examined to determine the amount of variance in each outcome that was accounted for by the model.

Results

Preliminary Analyses

Descriptive Statistics. Means, standard deviations, and paired-*t* test results for all the main study variables are presented in Table 1. These descriptive statistics suggest, overall, that both men and women experienced mild levels of PPD and were in the satisfied range of relationship adjustment, with women being significantly more satisfied in their relationships than men. It should be noted that 15 out of 82 women (18.29%) obtained scores of 10 or above (the cut off for potential depression) on the EPDS, whereas 6 out of 72 men (8.33%) obtained scores of 10 or more. Overall, the sample represented a typical community-based sample rather than a clinically depressed sample.

In terms of role functioning, both men and women experienced mild to moderate levels of role intensity, role unacceptability, role satisfaction, work-family strain, and work-family gains. Additionally, both partners reported fairly equal divisions of labor, although both men and women reported that women were move involved than men in family decision-making and childcare. Interestingly, women reported that they were slightly more involved in household tasks as well, although men reported that men were more involved in this domain. One final noteworthy gender difference is that whereas women experienced greater role intensity than men, men experienced greater role unacceptability than women. That is, women reported investing more time, energy, etc. in various roles, but men reported a greater sense that their level of role involvement was unacceptable to them.

Within-partner correlations. Tables 2 (women) and 3 (men) present within partner correlations among all of the main study variables. These matrices suggest that potentially important correlates of PPD include work-family gains for women and work-family gains, work-family strain, role unacceptability, and greater relationship adjustment for men. Additionally, potentially important correlates of relationship adjustment include role dissatisfaction in all three domains (household, family decision-making and childcare) for women, and role unacceptability, work-family gains, role involvement in family decision-making, and family decision-making dissatisfaction for men. Associations among roles, relationship adjustment, and PPD were more formally examined using path analysis (see below).

Cross-partner correlations. Table 4 presents cross-partner associations for the main study variables. Women's role functioning did not predict men's PPD, and men's role functioning also did not predict women's PPD. Thus, neither partners' PPD was related to the second partner's role functioning. However, men's role acceptability and family decision-making satisfaction were associated with women's relationship adjustment; additionally, women's family decision-making satisfaction was associated with men's relationship adjustment. This suggests that men's and women's role functioning may impact one another's relationship adjustment but likely does not impact one another's individual PPD.

Table 4 also indicates some associations between common variables for men and women, including relationship adjustment, role involvement in all three domains, and satisfaction with the household role. This suggests some level of non-independence of the data; that is, these findings support the common finding when examining couples that one

Table 1

Means, Standard Deviations, and Contrast of Predictor and Outcome Variables by Gender

	Women		Men		
Variable	Mean	SD	Mean	SD	Paired *T* test
Postpartum Distress	5.87	4.01	4.79	3.30	t (71) = 1.56
Relationship Adjustment	135.77	21.62	132.70	20.54	t (72) = 2.84**
Role Intensity	238.49	21.96	229.11	27.58	t (27) = 2.07*
Role Unacceptability	132.22	25.62	140.19	28.37	t (27) = 2.31*
Work-Family Strain	17.09	4.62	15.48	3.61	t (31) = 1.75
Work-Family Gains	19.69	3.91	20.66	4.12	t (31) = .14
Household Role Involvement	4.87	.83	5.47	.76	t (72) = 6.92**
Family Decision Involvement	4.84	.61	4.87	.58	t (72) = .16
Childcare Role Involvement	3.43	.90	3.80	.80	t (72) = 4.29**
Household Role Dissatisfaction	1.02	.58	.88	.49	t (71) =1.54
Family Decision Dissatisfaction	.67	.58	.72	.52	t (71) =1.34
Childcare Role Dissatisfaction	.85	.64	.68	.63	t (71) =1.44

Note. SD=Standard Deviation. Involvement scores are 1-9 where 9 means men do it all and 1 means women do it all.

*p<.05. **p<.01.

Table 2

Correlations between Role Functioning, Relationship Adjustment, and Postpartum Distress for Women

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Postpartum Distress	1.00											
2. Relationship Adjustment	-.12	1.00										
3. Role Intensity	-.18	.19	1.00									
4. Role Unacceptability	.22	-.30	-.60**	1.00								
5. Work-Family Strain	.22	-.05	-.16	.43**	1.00							
6. Work-Family Gains	-.31*	.12	.17	-.26	-.38*	1.00						
7. Household Role Involve	.13	.15	.11	-.23	-.09	.32*	1.00					
8. Family Decision Involve	.09	.20	.21	-.25	-.01	.09	.47**	1.00				
9. Childcare Role Involve	.14	.20	-.20	-.15	-.17	.26	.09	.06	1.00			
10. Household Role Dissatis	-.09	-.35**	-.13	.42**	.25	-.14	-.36**	-.25*	-.14	1.00		
11. Family Decision Dissatis	-.09	-.40**	-.07	.32*	.30*	-.14	-.33**	-.58**	-.13	.44**	1.00	
12. Childcare Role Dissatis	-.06	-.35**	.06	.38*	.32*	-.31*	-.09	.00	-.46**	.41**	.39**	1.00

Note. Involv = Involvement. Dissatis = Dissatisfaction.

*p<.05. **p<.01.

Table 3

Correlations between Role Functioning, Relationship Adjustment, and Postpartum Distress for Men

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Postpartum Distress	1.00											
2. Relationship Adjustment	-.48**	1.00										
3. Role Intensity	-.12	.22	1.00									
4. Role Unacceptability	.46**	-.46**	-.57**	1.00								
5. Work-Family Strain	.26*	-.13	-.07	.18	1.00							
6. Work-Family Gains	-.31*	.27*	.43**	-.44**	-.03	1.00						
7. Household Role Involve	.21	-.18	.17	-.04	.04	.09	1.00					
8. Family Decision Involve	.06	.33**	.06	-.06	-.04	.08	.11	1.00				
9. Childcare Role Involve	.19	-.05	.29*	-.13	-.01	.02	.08	.04	1.00			
10. Household Role Dissatis	.22	-.21	-.22	.32**	.27*	-.25*	.10	.01	-.16	1.00		
11. Family Decision Dissatis	.01	-.36**	-.23	.24	.12	-.24	.01	-.30*	-.03	.10	1.00	
12. Childcare Role Dissatis	-.06	.06	-.32*	.35**	.08	-.20	.10	.03	-.56**	.29*	.10	1.00

Note. Involv = Involvement. Dissatis = Dissatisfaction.

*p<.05. **p<.01.

Table 4

Cross-partner Correlations between Role Functioning, Relationship Adjustment, and Postpartum Distress

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Postpartum Distress	.07	.08	.19	-.05	.09	.09	.16	.08	.10	.09	.08	-.09
2. Relationship Adjustment	-.03	.59**	.21	-.28*	.18	.01	-.15	.19	.09	-.05	-.26*	.04
3. Role Intensity	-.03	-.23	.01	-.07	-.10	-.33	-.12	.08	-.34*	-.20	.22	.05
4. Role Unacceptability	-.06	.20	-.18	.19	-.10	.24	.39*	.01	.05	.12	-.08	.26
5. Work-Family Strain	.05	.28	.17	-.08	-.05	.23	.25	.29	.11	-.09	-.10	.04
6. Work-Family Gains	.20	-.18	.18	-.10	-.01	-.10	.11	-.15	.10	-.25	-.16	-.38*
7. Household Role Involve	.11	-.05	.27*	-.15	.05	.15	.67**	.15	.04	-.12	-.14	-.08
8. Family Decision Involve	-.07	.07	.04	-.13	-.03	.06	.12	.42**	-.04	-.05	-.08	-.12
9. Childcare Role Involve	.14	.06	.04	.07	.10	-.09	-.12	.06	.60**	-.10	.05	-.18
10. Household Role Dissatis	-.06	-.22	-.30*	.16	.15	-.05	-.05	-.13	-.01	.39**	.14	-.03
11. Family Decision Dissatis	.04	-.34**	-.16	.17	.07	-.16	.06	-.22	.06	.09	.16	.06
12. Childcare Role Dissatis	.03	-.20	-.12	.09	-.08	-.05	.22	.12	-.13	.12	-.14	.15

Note. Involv = Involvement. Dissatis = Dissatisfaction. The left column denotes women's variables and the top row denotes men's variables.

*p<.05. **p<.01.

partner's experience is often related to their partner's experience within the same domain. Even so, the majority of variables, including PPD, were not associated, suggesting that most variables were relatively independent among partners

Factor Analyses

The next objective was to determine whether domain-specific subscale scores could be created from the REQ and used in models examining whether role functioning in *specific* domains predicted PPD. First, a series of CFAs of the REQ was conducted, one for role intensity and one for acceptability. Initially, five factors were postulated (individual, partner, parent, household, and work). Given the overall model fit was extremely poor, the models were re-estimated using a four-factor model (using the four domains denoted in the measure), and then a three-factor model (individual, work, and partner/parent). None of the CFAs had adequate fit (see Table 5). Therefore, EFAs were conducted to better assess the underlying structure of the measure without a priori theoretical constraints.

Two EFAs were conducted, one for role acceptability and one for role intensity. A promax rotation was specified, given that factors were likely correlated, and two to seven factors were extracted. Eigenvalues and scree plots were examined to determine how many factors the EFA supported. Up to 17-20 factors were supported, although this number of factors is conceptually meaningless. Additionally, individual factor loadings for each item were examined for the 2-7 factor models. The items which denoted each factor under these models were also inconsistent with theory. Taken together, results of the factor analyses did not support differentiating among individual domains within the scale.

Table 5

Model Fit Indices for Initial Confirmatory Factor Analysis of Role Enactment Questionnaire

Model	X^2	CFI	TLI	RMSEA
Role Intensity 5-factor	χ^2 (2135) = 3775.21**	.68	.67	.07
Role Intensity 4-factor	χ^2 (2138) = 3673.01**	.70	.69	.07
Role Intensity 3-factor	χ^2 (2141) = 4028.35**	.63	.62	.08
Role Acceptability 5-factor	χ^2 (1642) = 3303.24**	.58	.56	.08
Role Acceptability 4-factor	χ^2 (1646) = 2438.88**	.78	.77	.06
Role Acceptability 3-factor	χ^2 (1649) = 2711.02**	.71	.70	.06

Note. TLI = Tucker Lewis Index. CFI = Comparative Fit Index. RMSEA = Root Mean Square Error of Approximation.

*p<.05. **p<.01.

One final exploratory set of factor analyses was conducted using a model-building approach to determine whether *latent* variables could be reasonably defined for each role domain and utilized in analyses. More specifically, CFA was utilized to determine the best fitting model for individual, partner, household, parent, and work domains separately for role intensity and role acceptability for each gender. After the best fitting model for each domain was determined, the models were pieced together one at a time. As long as the model continued to have adequate fit, more domains were added to create the final, best fitting model for that variable (role intensity or role acceptability) and gender, and model fit indices were examined.

Within this model building approach, the best fitting models for each domain were determined in several steps. In the first model within a given domain, a latent variable was defined by all of the items of that scale. If the overall model fit well, this represented the final model. If it did not fit well, the next step was to determine whether any items should be deleted from the scale, indicated by a non-significant factor loading and R^2. The item was then deleted, and the model fit was re-examined to determine whether or not to retain the item. Next, modification indices were examined to determine whether the addition of any correlations between similar items would improve model fit. If a correlation was suggested by modification indices *and* if that correlation made conceptual sense, the correlation was added to the model and the model fit was re-examined. The model was considered final after modification indices no longer suggested changes and/or the remaining suggested changes did not make conceptual sense.

The final, best fitting models for role intensity for both men and women included four latent variables (individual, partner, parent, and work), and the final models for role

acceptability included six latent variables (individual, partner, parent, work, traditional women's household tasks, and traditional men's household tasks). One item was omitted from the work domain for role intensity for women and for men. Finally, 14 correlations were included for role intensity for women, 13 for role intensity for men, 8 for role acceptability for women, and 14 for role acceptability for men. Model fit indices for these final models are presented in Table 6. Given inadequate model fit, utilizing these latent variables was contraindicated. The only remaining option for using these latent variables was to consider collapsing across various items (Muthén & Muthén , personal communication, January 9, 2013). This option was not pursued given the extent to which the scale was already altered to be utilized in these analyses.

Overall, factor analyses did not support the creation and use of domain-specific scores from the REQ. Therefore, an alternative scale, the Who Does What scale (WDW), was utilized as a proxy. As noted previously, this scale assesses role involvement (akin to role intensity) and role satisfaction (akin to role acceptability) in three domains: household tasks, childcare tasks, and family decision-making. Thus, it was still possible to examine domain-specific hypotheses.

Path Analyses

Finally, path analysis was used to evaluate the primary hypotheses of the study, as well as exploratory aims regarding cross-partner associations.

Overall role functioning models. The first aim of the study was to determine whether several important aspects of overall, non domain-specific role functioning (i.e., role intensity, role acceptability, work-family strain, and work-family gains) predicted PPD, and whether this association was partially mediated by relationship adjustment. It

Table 6

Model Fit Indices for Four Latent Variable Models Derived From Role Enactment Questionnaire

Model	X^2	CFI	TLI	RMSEA
Role Intensity Women	χ^2 (882) = 1091.55**	.88	.87	.05
Role Intensity Men	χ^2 (883) = 1096.30**	.91	.90	.06
Role Unacceptability Women	χ^2 (1627) = 1856.40**	.89	.89	.04
Role Unacceptability Men	χ^2 (1623) = 1858.32**	.88	.88	.05

Note. TLI = Tucker Lewis Index. CFI = Comparative Fit Index. RMSEA = Root Mean Square Error of Approximation.

*p<.05. **p<.01.

was hypothesized that greater role intensity, role unacceptability, and work-family strain, as well as less work-family gains, would be associated with greater PPD, and that these associations would be partially mediated by relationship adjustment. The originally proposed model included both men and women simultaneously; however, a simultaneous model proved too complex for the data and would not converge. Therefore, men's and women's path analysis models were analyzed separately.

An additional aim of this study was to examine cross-partner associations between one partner's role functioning and the other partner's relationship adjustment and PPD. Therefore, two additional models were conducted examining the impact of men's role intensity, role acceptability, work-family strain, and work-family gains on women's PPD via women's relationship adjustment and visa versa. This aim was exploratory in nature, and, therefore, no a priori hypotheses were made. Given overall model fit indices could not be examined, R^2 was examined for both relationship adjustment and PPD for each model. Model results are presented in Tables 7-10 and are described below.

Women's role functioning predicting women's PPD (see Table 7 and Figure 5). For women, the direct effect for work-family strain on PPD was significant, such that greater work-family strain was associated with higher levels of PPD. Additionally, number of children was significant, such that having more children was associated with having *less* PPD. No other direct or indirect effects were significant for women. Thus, Hypothesis 1 was only partially supported in that one role variable predicted women's PPD, and this effect was not mediated by relationship adjustment. Regarding overall model fit, $R^2 = .38$ for PPD and $R^2 = .17$ for relationship adjustment, indicating that 38%

Table 7

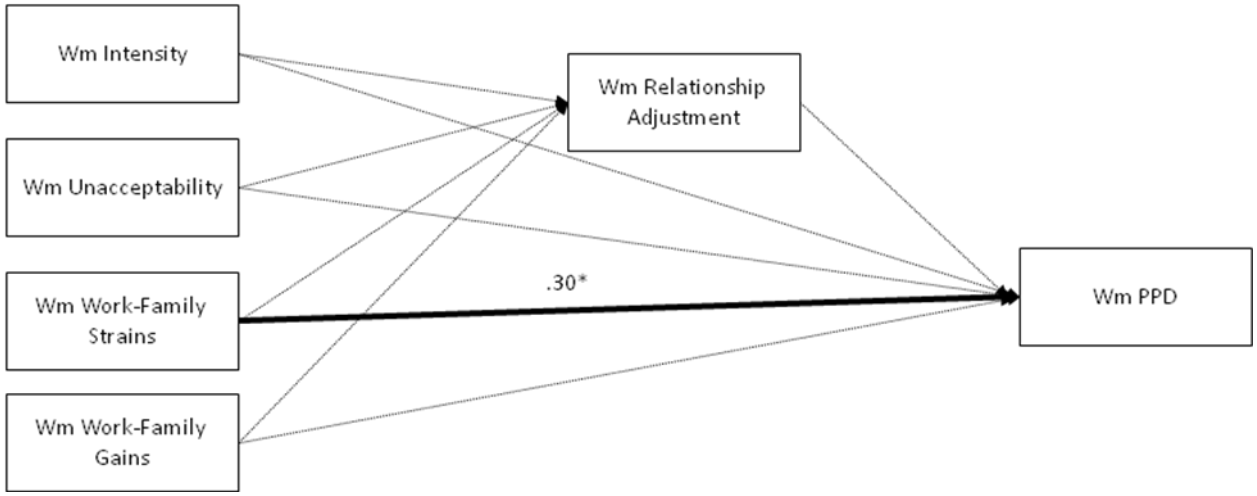
Direct and Indirect Effects from Path Analysis Modeling Associations between Role Functioning Variables, Relationship Adjustment, and Postpartum Distress for Women

Predictor Variable	Outcome Variable	B	95% CI	
Direct Effects				
Role Intensity	Relationship Adjustment	-.02	-0.35	.80
Role Unacceptability	Relationship Adjustment	-.32	-.70	.09
Work-Family Strain	Relationship Adjustment	.87	-0.66	2.63
Work-Family Gains	Relationship Adjustment	.16	-2.68	2.32
Role Intensity	PPD	.00	-.05	.05
Role Unacceptability	PPD	-.03	-.09	.03
Work-Family Strain	PPD	.30*	.04	.60
Work-Family Gains	PPD	.00	-.28	.31
Relationship Adjustment	PPD	.00	-.06	.06
Indirect Effects: Relationship Adjustment as Mediator				
Role Intensity	PPD	.00	-.02	.02
Role Unacceptability	PPD	.00	-.02	.03
Work-Family Strain	PPD	.00	-.09	.07
Work-Family Gains	PPD	.00	-.07	.08
Effects of Covariates				
Length of Marriage	Relationship Adjustment	-1.03	-3.89	1.80
Number of Children	Relationship Adjustment	.59	-9.54	11.79
History of Depression	Relationship Adjustment	11.12	-9.61	40.56
History of Anxiety Disorder	Relationship Adjustment	-8.08	-40.89	19.77
Length of Marriage	PPD	-.26	-.58	.12
Number of Children	PPD	-1.67*	-3.36	-.31
History of Depression	PPD	-2.82	-6.98	.47
History of Anxiety Disorder	PPD	-.28	-5.53	4.68

Note. B = Estimate for the Effect. SE = Standard Error. 95% CI = 95% Bootstrap Confidence Interval. PPD = Postpartum Distress.

*p<.05. **p<.01

Figure 5. Results from the Path Analysis Examining the Relationship between Four Aspects of Women's Role Functioning and Women's Relationship Adjustment and Postpartum Distress



of the variance in PPD and 17% of the variance in women's relationship adjustment was accounted for by this model.

Men's role functioning predicting men's PPD (see Table 8 and Figure 6). In contrast, for men, the indirect effect for role unacceptability was marginally significant, such that greater role unacceptability was associated with higher levels of PPD; this association was partially mediated by relationship adjustment. That is, among men, greater role unacceptability was associated with lower relationship adjustment, which in turn was associated with higher levels of PPD. The direct effects for role unacceptability and relationship adjustment on PPD were also marginally significant for men, which indicates that relationship adjustment is a *partial* and not a full mediator of role unacceptability. No other direct or indirect effects were significant for men. Thus, Hypothesis 1 was partially supported in that one role variable, role unacceptability, marginally predicted men's PPD, and this effect was partially mediated by relationship adjustment. Regarding overall model fit, R^2 = .43 for PPD and R^2 =.30 for relationship adjustment, indicating that 43% of the variance in PPD and 30% of the variance in men's relationship adjustment was accounted for by this model.

Men's role functioning predicting women's PPD (see Table 9 and Figure 7). In terms of cross-partner associations, the direct effect of role unacceptability for men on women's relationship adjustment was significant, such that higher levels of role unacceptability for men was associated with lower relationship adjustment for women. Women's report of length of marriage was included as a control variable and also was significant, such that greater length of marriage was associated with less PPD for women. No other effects were significant. Thus, role unacceptability for men predicted both their

Table 8

Direct and Indirect Effects from Path Analysis Modeling Associations between Role Functioning Variables, Relationship Adjustment, and Postpartum Distress for Men

Predictor Variable	Outcome Variable	B	95% CI	
Direct Effects				
Role Intensity	Relationship Adjustment	-.05	-.31	.21
Role Unacceptability	Relationship Adjustment	-.29	-.52	.02
Work-Family Strain	Relationship Adjustment	-.16	-1.85	1.35
Work-Family Gains	Relationship Adjustment	.88	-.41	2.18
Role Intensity	PPD	.03	-.01	.07
Role Unacceptability	PPD	.04^{+}	.00	.08
Work-Family Strain	PPD	.16	-.06	.40
Work-Family Gains	PPD	-.14	-.35	.07
Relationship Adjustment	PPD	-.06^{+}	-.10	.00
Indirect Effects: Relationship Adjustment as Mediator				
Role Intensity	PPD	.00	-.01	.02
Role Unacceptability	PPD	.02^{+}	.00	.04
Work-Family Strain	PPD	.01	-.08	.13
Work-Family Gains	PPD	-.05	-.17	.01
Effects of Covariates				
Length of Marriage	Relationship Adjustment	-.83	-2.64	.93
Number of Children	Relationship Adjustment	-5.25	-14.49	9.56
History of Depression	Relationship Adjustment	7.81	-17.43	35.12
History of Anxiety Disorder	Relationship Adjustment	6.33	-18.97	39.94
Length of Marriage	PPD	.04	-.25	.28
Number of Children	PPD	-.47	-2.41	.83
History of Depression	PPD	-.38	-3.92	2.94
History of Anxiety Disorder	PPD	-.65	-4.08	2.41

Note. B = Estimate for the Effect. SE = Standard Error. 95% CI = 95% Bootstrap Confidence Interval. PPD = Postpartum Distress.

*p<.05. **p<.01. ^{+}p = .05.

Table 9

Direct and Indirect Effects from Path Analysis Modeling Associations between Role Functioning Variables, Relationship Adjustment, and Postpartum Distress where Men's Role Variables Predict Women's Outcomes

Predictor Variable	Outcome Variable	B	95% CI	
Direct Effects				
Men Role Intensity	Wm Relationship Adjustment	.06	-.15	.28
Men Role Unacceptability	Wm Relationship Adjustment	-.25*	-.49	-.02
Men Work-Family Strain	Wm Relationship Adjustment	1.30	-.14	2.86
Men Work-Family Gains	Wm Relationship Adjustment	-.74	-2.34	.71
Men Role Intensity	Wm PPD	.03	-.01	.07
Men Role Unacceptability	Wm PPD	.00	-.06	.05
Men Work-Family Strain	Wm PPD	.09	-.15	.30
Men Work-Family Gains	Wm PPD	.00	-.33	.31
Wm Relationship Adjustment	Wm PPD	-.02	-.09	.06
Indirect Effects: Relationship Adjustment as Mediator				
Men Role Intensity	Wm PPD	.00	-.02	.00
Men Role Unacceptability	Wm PPD	.01	-.01	.04
Men Work-Family Strain	Wm PPD	-.03	-.21	.05
Men Work-Family Gains	Wm PPD	.02	-.04	.16
Effects of Covariates				
Wm Length of Marriage	Wm Relationship Adjustment	-1.27	-3.07	.63
Wm Number of Children	Wm Relationship Adjustment	-2.39	-12.14	2.42
Wm History of Depression	Wm Relationship Adjustment	-.68	-13.18	14.31
Wm History of Anxiety Disorder	Wm Relationship Adjustment	3.48	-19.55	29.36
Wm Length of Marriage	Wm PPD	-.42*	-.89	-.06
Wm Number of Children	Wm PPD	.10	-1.88	1.66
Wm History of Depression	Wm PPD	1.31	-1.32	3.76
Wm History of Anxiety Disorder	Wm PPD	-2.29	-8.51	2.60

Note. B = Estimate for the Effect. SE = Standard Error. 95% CI = 95% Bootstrap Confidence Interval. Wm = women. PPD = Postpartum Distress.

*p<.05. **p<.01.

Figure 6. Results from the Path Analysis Examining the Relationship between Four Aspects of Men's Role Functioning and Men's Relationship Adjustment and Postpartum Distress

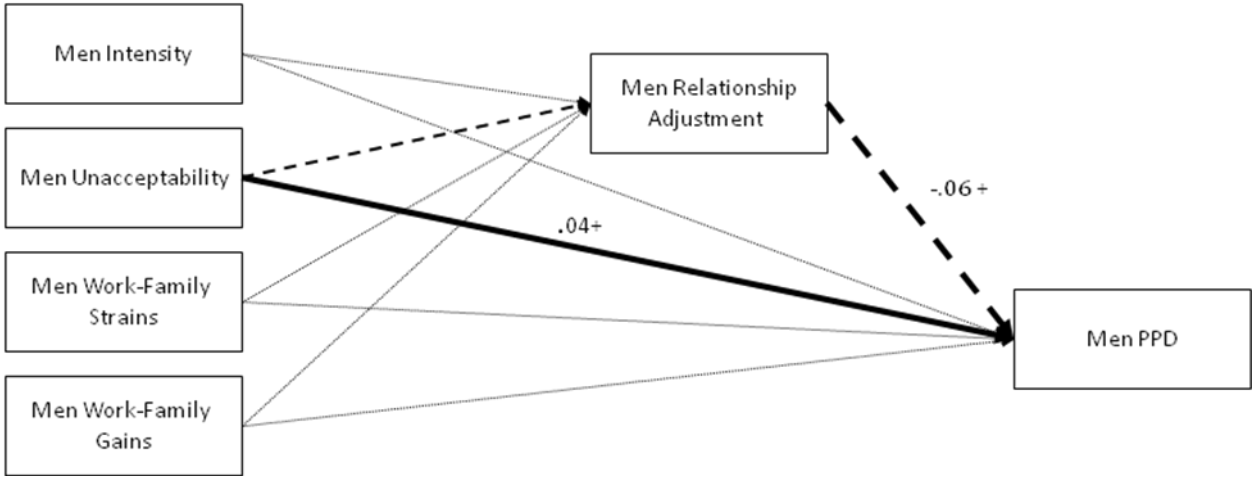
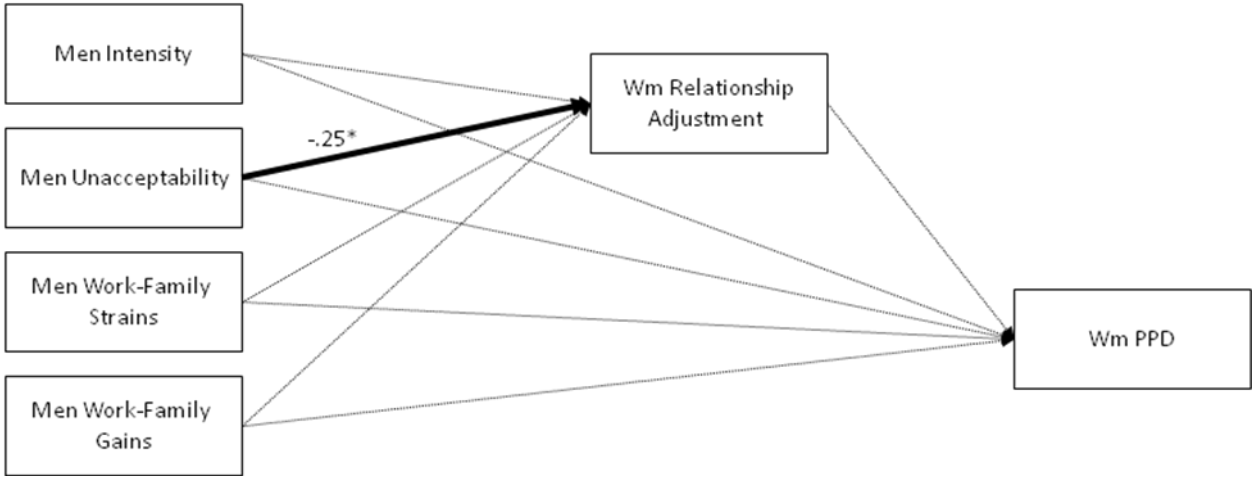


Figure 7. Results from the Path Analysis Examining the Relationship between Four Aspects of Men's Role Functioning and Women's Relationship Adjustment and Postpartum Distress



own PPD via relationship adjustment, as well as *women*'s relationship adjustment. Regarding overall model fit, R^2 = .18 for PPD and R^2 =.21 for relationship adjustment, indicating that 18% of the variance in women's PPD and 21% of the variance in women's relationship adjustment was accounted for by this model.

Women's role functioning predicting men's PPD (see Table 10 and Figure 8). Additionally, the direct effect of work-family strain for women on men's relationship adjustment was significant, such that higher levels of work-family strain for women were associated with *greater* relationship adjustment for men. No other direct or indirect effects were significant. Thus, women's work-family strain predicted not only their own PPD but men's greater relationship adjustment. Regarding overall model fit, R^2 = .23 for men's PPD and R^2 =.33 for men's relationship adjustment, indicating that 23% of the variance in men's PPD and 33% of the variance in men's relationship adjustment was accounted for by this model.

Summary. Together, results indicated that men's role unacceptability predicted their own greater PPD, partially mediated by their own poorer relationship adjustment, and also predicted *women's* poorer relationship adjustment. Additionally, women's work-family strain predicted their own greater PPD as well as men's *greater* relationship adjustment. Between 18% and 43% of the variance in PPD was explained within each of these models, and between 17% and 33% of the variance in relationship adjustment was explained within of these models.

Domain-specific role functioning models. The second aim of this study was to determine whether the degree of involvement in various roles and the subjective sense of acceptability or satisfaction with these roles within *specific* domains (e.g., childcare or

Table 10

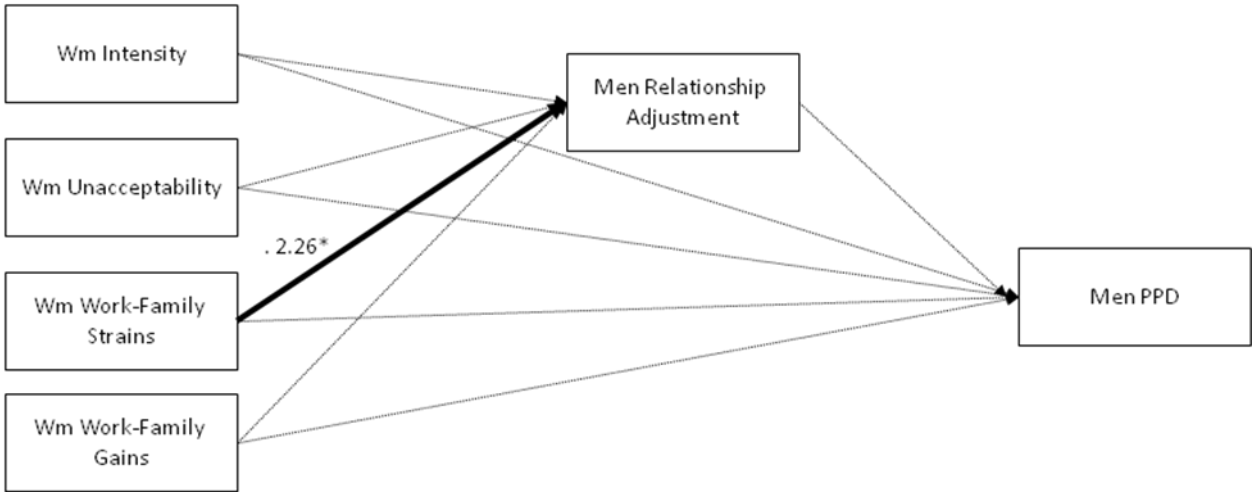
Direct and Indirect Effects from Path Analysis Modeling Associations between Role Functioning Variables, Relationship Adjustment, and Postpartum Distress where Women's Role Variables Predict Men's Outcomes

Predictor Variable	Outcome Variable	B	95% CI	
Direct Effects				
Wm Role Intensity	Men Relationship Adjustment	-.05	-.46	.37
Wm Role Unacceptability	Men Relationship Adjustment	-.13	-.53	.42
Wm Work-Family Strain	Men Relationship Adjustment	2.26*	.83	3.84
Wm Work-Family Gains	Men Relationship Adjustment	-.17	-2.08	2.26
Wm Role Intensity	Men PPD	-.04	-.14	.04
Wm Role Unacceptability	Men PPD	-.02	-.14	.08
Wm Work-Family Strain	Men PPD	.22	-.23	.81
Wm Work-Family Gains	Men PPD	.27	-.19	.63
Men Relationship Adjustment	Men PPD	-.07	-.17	.06
Indirect Effects: Relationship Adjustment as Mediator				
Wm Role Intensity	Men PPD	.01	-.03	.07
Wm Role Unacceptability	Men PPD	.00	-.03	.08
Wm Work-Family Strain	Men PPD	-.15	-.54	.10
Wm Work-Family Gains	Men PPD	.01	-.20	.27
Effects of Covariates				
Men Length of Marriage	Men Relationship Adjustment	-.65	-3.72	2.61
Men Number of Children	Men Relationship Adjustment	-5.29	-19.39	13.80
Men History of Depression	Men Relationship Adjustment	23.07	-10.46	48.18
Men History of Anxiety Disorder	Men Relationship Adjustment	.94	-16.55	18.18
Men Length of Marriage	Men PPD	.08	-.56	.97
Men Number of Children	Men PPD	-.18	-3.86	3.55
Men History of Depression	Men PPD	-1.55	-9.53	9.07
Men History of Anxiety Disorder	Men PPD	-.68	-5.16	6.86

Note. B = Estimate for the Effect. SE = Standard Error. 95% CI = 95% Bootstrap Confidence Interval. Wm = women. PPD = Postpartum Distress.

*p<.05. **p<.01.

Figure 8. Results from the Path Analysis Examining the Relationship between Four Aspects of Women's Role Functioning and Men's Relationship Adjustment and Postpartum Distress



household tasks) predicted PPD and whether this association was partially mediated by relationship adjustment. The revised and final hypothesis regarding this aim (i.e., a hypothesis utilizing the WDW Questionnaire rather than the REQ) was that higher role involvement in childcare and household tasks, lower role involvement in family decision-making, and lower satisfaction in all three domains would predict higher levels of PPD, and these associations would be partially mediated by relationship adjustment. As with Hypothesis 1, men's and women's path analysis models were analyzed separately. Additionally, two exploratory cross-partner models were examined to determine whether men's role involvement and role satisfaction in specific domains predicted women's PPD via women's relationship adjustment and visa versa. Overall model fit was indicated by R^2 for both relationship adjustment and PPD for each model. Model results are presented in Tables 11-14 and are discussed below.

Women's role functioning predicting women's PPD (see Table 11 and Figure 9). For women, all direct and indirect effects were non-significant except for the control variable length of marriage. Longer length of marriage predicted lower levels of PPD. Thus, Hypothesis 2 was not supported for women. Regarding overall model fit, $R^2 = .19$ for PPD and $R^2 = .20$ for relationship adjustment, indicating that 19% of the variance in women's PPD and 20% of the variance in women's relationship adjustment was accounted for by this model.

Men's role functioning predicting Men's PPD (see Table 12 and Figure 10). For men, the indirect effects for both family decision-making involvement and family decision-making satisfaction were significant, such that greater involvement and greater satisfaction were associated with less PPD, and these two effects were fully mediated by

Table 11

Direct and Indirect Effects from Path Analysis Modeling Associations between Role Involvement and Satisfaction, Relationship Adjustment, and Postpartum Distress for Women

Predictor Variable	Outcome Variable	B	95% CI	
Direct Effects				
Household Involvement	Relationship Adjustment	-1.00	-7.60	5.43
Decision-making Involvement	Relationship Adjustment	-1.66	-12.14	8.45
Childcare Involvement	Relationship Adjustment	1.96	-2.83	7.31
Household Dissatisfaction	Relationship Adjustment	-4.49	-13.96	5.63
Decision-making Dissatisfaction	Relationship Adjustment	-8.14	-21.18	2.83
Childcare Dissatisfaction	Relationship Adjustment	-4.90	-12.66	3.35
Household Involvement	PPD	.82	-.78	2.17
Decision-making Involvement	PPD	-.26	-2.27	1.64
Childcare Involvement	PPD	.70	-.79	1.92
Household Dissatisfaction	PPD	.04	-1.77	1.72
Decision-making Dissatisfaction	PPD	-.89	-3.29	1.19
Childcare Dissatisfaction	PPD	.34	-1.60	2.33
Relationship Adjustment	PPD	-.04	-.10	.04
Indirect Effects: Relationship Adjustment as Mediator				
Household Involvement	PPD	.04	-.17	.55
Decision-making Involvement	PPD	.06	-.28	.97
Childcare Involvement	PPD	-.07	-.58	.09
Household Dissatisfaction	PPD	.16	-.16	1.10
Decision-making Dissatisfaction	PPD	.30	-.15	1.80
Childcare Dissatisfaction	PPD	.18	-.13	1.02
Effects of Covariates				
Length of Marriage	Relationship Adjustment	-.81	-2.52	1.03
Number of Children	Relationship Adjustment	-.81	-9.17	3.61
History of Depression	Relationship Adjustment	2.46	-7.91	15.69
History of Anxiety Disorder	Relationship Adjustment	4.92	-16.33	22.72

Note. B = Estimate for the Effect. SE = Standard Error. 95% CI = 95% Bootstrap Confidence Interval. PPD = Postpartum Distress. Scores above 5 on role involvement indicate that men contribute more to that domain and scores below 5 indicates women contribute more to that domain.
*p<.05. **p<.01.

Table 11 (continued)

Direct and Indirect Effects from Path Analysis Modeling Associations between Role Involvement and Satisfaction, Relationship Adjustment, and Postpartum Distress for Women

Predictor Variable	Outcome Variable	B	95% CI	
Length of Marriage	PPD	-.41*	-.77	-.12
Number of Children	PPD	.19	-1.82	1.48
History of Depression	PPD	-.15	-2.67	2.42
History of Anxiety Disorder	PPD	-1.30	-6.07	2.44

Note. B = Estimate for the Effect. SE = Standard Error. 95% CI = 95% Bootstrap Confidence Interval. PPD = Postpartum Distress. Scores above 5 on role involvement indicate that men contribute more to that domain and scores below 5 indicate that women contribute more to that domain.
*p<.05. **p<.01.

Table 12

Direct and Indirect Effects from Path Analysis Modeling Associations between Role Involvement and Satisfaction, Relationship Adjustment, and Postpartum Distress for Men

Predictor Variable	Outcome Variable	B	95% CI	
Direct Effects				
Household Involvement	Relationship Adjustment	-4.07	-11.78	3.91
Decision-making Involvement	Relationship Adjustment	9.36*	1.75	16.88
Childcare Involvement	Relationship Adjustment	-.21	-6.55	6.36
Household Dissatisfaction	Relationship Adjustment	-7.99	-20.08	7.29
Decision-making Dissatisfaction	Relationship Adjustment	-10.24	-19.14	.50
Childcare Dissatisfaction	Relationship Adjustment	4.45	-3.52	13.73
Household Involvement	PPD	.12	-.81	1.09
Decision-making Involvement	PPD	1.04	-.33	2.55
Childcare Involvement	PPD	.71	-.55	1.79
Household Dissatisfaction	PPD	.92	-.52	2.46
Decision-making Dissatisfaction	PPD	-.74	-2.42	.71
Childcare Dissatisfaction	PPD	.15	-1.37	1.67
Relationship Adjustment	PPD	-.08*	-.13	-.03
Indirect Effects: Relationship Adjustment as Mediator				
Household Involvement	PPD	.32	-.29	1.19
Decision-making Involvement	PPD	-.74*	-1.80	-.13
Childcare Involvement	PPD	.71	-.55	1.79
Household Dissatisfaction	PPD	.63	-.47	2.09
Decision-making Dissatisfaction	PPD	.81*	.03	2.02
Childcare Dissatisfaction	PPD	-.35	-1.34	.23
Effects of Covariates				
Length of Marriage	Relationship Adjustment	-.92	-2.34	.66
Number of Children	Relationship Adjustment	-1.62	-9.71	7.49
History of Depression	Relationship Adjustment	11.98	-19.02	33.59
History of Anxiety Disorder	Relationship Adjustment	3.83	-9.71	23.94

Note. B = Estimate for the Effect. SE = Standard Error. 95% CI = 95% Bootstrap Confidence Interval. PPD = Postpartum Distress. Scores above 5 on role involvement indicate that men contribute more to that domain and scores below 5 indicate that women contribute more to that domain.

*p<.05. **p<.01.

Table 12 (Continued)

Direct and Indirect Effects from Path Analysis Modeling Associations between Role Involvement and Satisfaction, Relationship Adjustment, and Postpartum Distress for Men

Predictor Variable	Outcome Variable	B	95% CI	
Length of Marriage	PPD	.04	-.24	.30
Number of Children	PPD	.04	-1.79	1.45
History of Depression	PPD	-1.62	-5.12	1.77
History of Anxiety Disorder	PPD	-.26	-2.22	1.85

Note. B = Estimate for the Effect. SE = Standard Error. 95% CI = 95% Bootstrap Confidence Interval. PPD = Postpartum Distress. Scores above 5 on role involvement indicate that men contribute more to that domain and scores below 5 indicate women contribute more to that domain.

*p<.05. **p<.01.

Figure 9. Results from the Path Analysis Examining the Relationship between Women's Role Involvement and Role Satisfaction in Three Domains and Women's Relationship Adjustment and Postpartum Distress

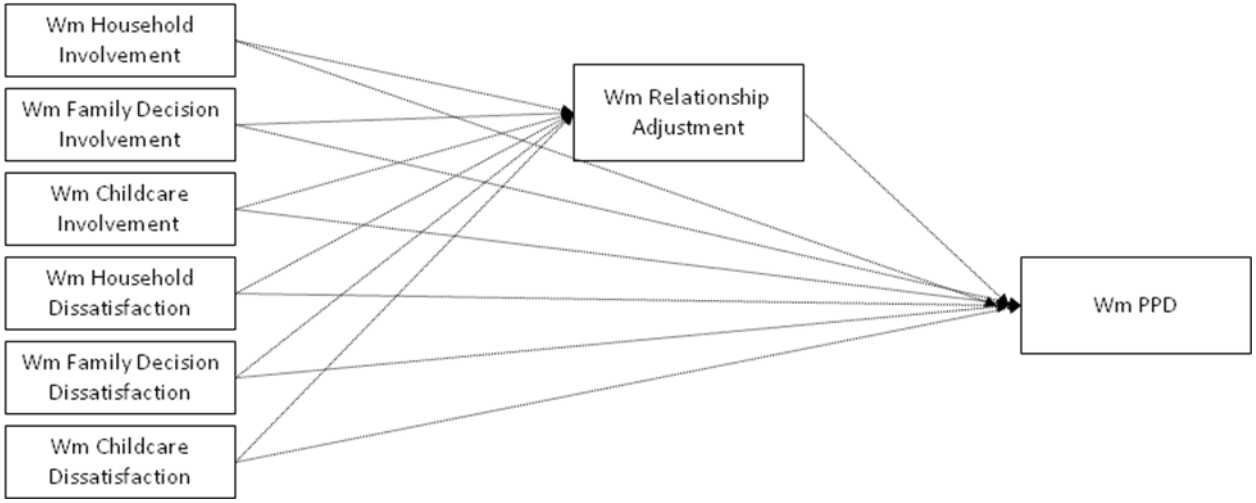
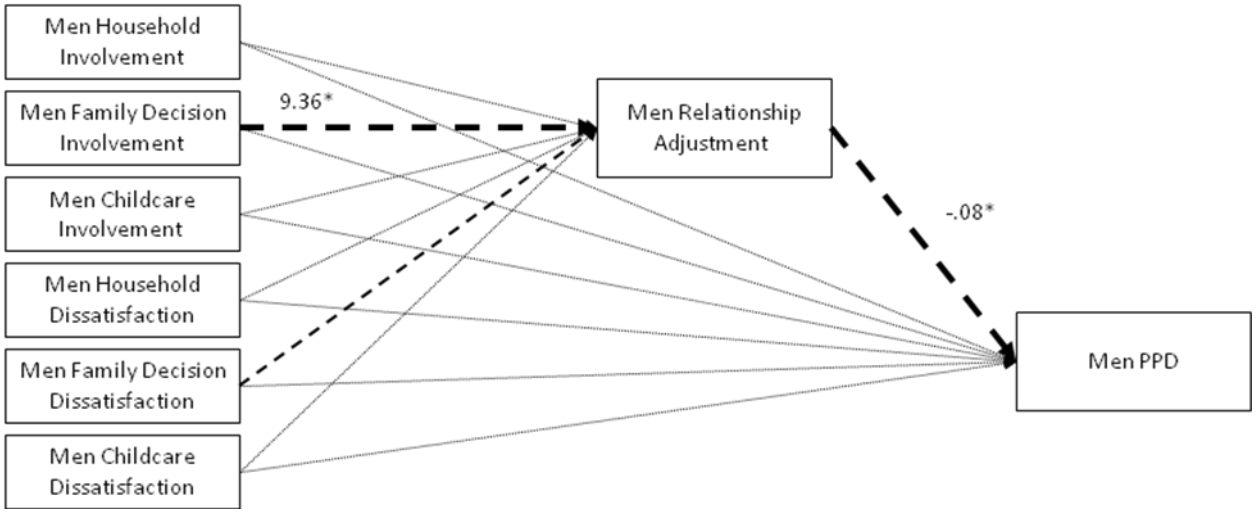


Figure 10. Results from the Path Analysis Examining the Relationship between Men's Role Involvement and Role Satisfaction in Three Domains and Men's Relationship Adjustment and Postpartum Distress



relationship adjustment. That is, greater decision-making involvement and greater decision-making satisfaction predicted greater relationship adjustment, which in turn predicted less PPD for men. Consistent with this finding, the direct effect of decision-making involvement on relationship adjustment and the direct effect of relationship adjustment on PPD for men were also significant. No other indirect or direct effects were significant for men. Thus, Hypothesis 2 was partially supported in that two domain-specific role variables, family decision-making involvement and family decision-making satisfaction, predicted PPD and these associations were fully mediated by relationship adjustment. Regarding overall model fit, R^2 = .35 for PPD and R^2 = .33 for relationship adjustment, indicating that 35% of the variance in men's PPD and 33% of the variance in men's relationship adjustment was accounted for by this model.

Men's role functioning predicting women's PPD (see Table 13 and Figure 11). In terms of cross-partner associations, no men's variables predicted women's outcomes. However, the control variable length of marriage was again significant, such that greater length of marriage per women's report was associated with less PPD for women. Thus, neither men's nor women's domain-specific role involvement or role satisfaction predicted women's PPD. Regarding overall model fit, R^2 = .17 for PPD and R^2 =.19 for relationship adjustment, indicating that 17% of the variance in women's PPD and 19% of the variance in women's relationship adjustment was accounted for by this model.

Women's role functioning predicting men's PPD (see Table 14 and Figure 12). In contrast, the indirect effect for women's decision-making satisfaction on men's PPD was significant, such that greater dissatisfaction with family decision-making for women predicted greater PPD for men, and this association was fully mediated by men's

Table 13

Direct and Indirect Effects from Path Analysis Modeling Associations between Role Involvement and Satisfaction, Relationship Adjustment, and Postpartum Distress for Men's Role Variables Predicting Women's Outcomes

Predictor Variable	Outcome Variable	B	95% CI	
Direct Effects				
Men Household Involvement	Wm Relationship Adjustment	-5.97	-13.43	.64
Men Decision-making Involvement	Wm Relationship Adjustment	4.31	-3.33	11.62
Men Childcare Involvement	Wm Relationship Adjustment	2.35	-4.60	7.90
Men Household Dissatisfaction	Wm Relationship Adjustment	.41	-7.87	8.79
Men Decision-making Dissatisfaction	Wm Relationship Adjustment	-9.28	-22.80	-.54
Men Childcare Dissatisfaction	Wm Relationship Adjustment	3.86	-5.42	11.63
Men Household Involvement	Wm PPD	.97	-.40	2.43
Men Decision-making Involvement	Wm PPD	.76	-1.12	2.55
Men Childcare Involvement	Wm PPD	.42	-1.38	1.94
Men Household Dissatisfaction	Wm PPD	.63	-1.19	2.74
Men Decision-making Dissatisfaction	Wm PPD	1.03	-.84	2.85
Men Childcare Dissatisfaction	Wm PPD	-.37	-2.76	1.47
Wm Relationship Adjustment	Wm PPD	.00	-.06	.08
Indirect Effects: Relationship Adjustment as Mediator				
Men Household Involvement	Wm PPD	.01	-.45	.53
Men Decision-making Involvement	Wm PPD	-.01	-.45	.40
Men Childcare Involvement	Wm PPD	.00	-.30	.30
Men Household Dissatisfaction	Wm PPD	.00	-.32	.30
Men Decision-making Dissatisfaction	Wm PPD	.01	-.69	.80
Men Childcare Dissatisfaction	Wm PPD	.00	-.45	.44

Note. B = Estimate for the Effect. SE = Standard Error. 95% CI = 95% Bootstrap Confidence Interval. Wm = women. PPD = Postpartum Distress. Scores above 5 on role involvement indicate that men contribute more to that domain and scores below 5 indicate that women contribute more to that domain.

*p<.05. **p<.01.

Table 13 (Continued)

Direct and Indirect Effects from Path Analysis Modeling Associations between Role Involvement and Satisfaction, Relationship Adjustment, and Postpartum Distress for Men's Role Variables Predicting Women's Outcomes

Predictor Variable	Outcome Variable	B	95% CI	
Effects of Covariates				
Wm Length of Marriage	Wm Relationship Adjustment	-1.05	-2.49	.45
Wm Number of Children	Wm Relationship Adjustment	-2.43	-10.46	3.25
Wm History of Depression	Wm Relationship Adjustment	1.09	-9.43	12.56
Wm History of Anxiety Disorder	Wm Relationship Adjustment	3.85	-13.46	26.64
Wm Length of Marriage	Wm PPD	-.32*	-.72	-.01
Wm Number of Children	Wm PPD	.69	-1.25	2.23
Wm History of Depression	Wm PPD	.32	-1.89	2.60
Wm History of Anxiety Disorder	Wm PPD	-1.90	-6.53	2.07

Note. B = Estimate for the Effect. SE = Standard Error. 95% CI = 95% Bootstrap Confidence Interval. Wm = women. PPD = Postpartum Distress. Scores above 5 on role involvement indicate that men contribute more to that domain and scores below 5 indicate that women contribute more to that domain.

*p<.05. **p<.01.

Table 14

Direct and Indirect Effects from Path Analysis Modeling Associations between Role Involvement and Satisfaction, Relationship Adjustment, and Postpartum Distress for Women's Role Variables Predicting Men's Outcomes

Predictor Variable	Outcome Variable	B	95% CI	
Direct Effects				
Wm Household Involvement	Men Relationship Adjustment	-3.67	-12.66	4.73
Wm Decision-making Involvement	Men Relationship Adjustment	-1.34	-11.64	8.66
Wm Childcare Involvement	Men Relationship Adjustment	-.12	-6.01	6.52
Wm Household Dissatisfaction	Men Relationship Adjustment	-4.44	-18.41	7.98
Wm Decision-making Dissatisfaction	Men Relationship Adjustment	-12.04	-23.17	.37
Wm Childcare Dissatisfaction	Men Relationship Adjustment	.81	-8.16	11.62
Wm Household Involvement	Men PPD	.53	-.49	1.52
Wm Decision-making Involvement	Men PPD	-1.36	-2.77	.01
Wm Childcare Involvement	Men PPD	.99*	.13	1.86
Wm Household Dissatisfaction	Men PPD	-.74	-2.67	1.02
Wm Decision-making Dissatisfaction	Men PPD	-1.45	-3.33	.09
Wm Childcare Dissatisfaction	Men PPD	.71	-.55	2.21
Men Relationship Adjustment	Men PPD	-.08*	-.12	-.03
Indirect Effects: Relationship Adjustment as Mediator				
Wm Household Involvement	Men PPD	.30	-.32	1.28
Wm Decision-making Involvement	Men PPD	.12	-.75	.97
Wm Childcare Involvement	Men PPD	.01	-.57	.52
Wm Household Dissatisfaction	Men PPD	.36	-.59	1.75
Wm Decision-making Dissatisfaction	Men PPD	.98*	.13	2.26
Wm Childcare Dissatisfaction	Men PPD	-.07	-1.04	.70

Note. B = Estimate for the Effect. SE = Standard Error. 95% CI = 95% Bootstrap Confidence Interval. Wm = women. PPD = Postpartum Distress. Scores above 5 on role involvement indicate that men contribute more to that domain and scores below 5 indicate that women contribute more to that domain.

*p<.05. **p<.01.

Table 14 (Continued0

Direct and Indirect Effects from Path Analysis Modeling Associations between Role Involvement and Satisfaction, Relationship Adjustment, and Postpartum Distress for Women's Role Variables Predicting Men's Outcomes

Predictor Variable	Outcome Variable	B	95% CI	
Effects of Covariates				
Men Length of Marriage	Men Relationship Adjustment	-.51	-2.25	1.48
Men Number of Children	Men Relationship Adjustment	-1.64	-13.86	10.00
Men History of Depression	Men Relationship Adjustment	12.55	-7.61	36.21
Men History of Anxiety Disorder	Men Relationship Adjustment	7.47	-10.24	30.74
Men Length of Marriage	Men PPD	-.01	-.31	.30
Men Number of Children	Men PPD	.30	-1.78	1.61
Men History of Depression	Men PPD	-1.58	-4.31	1.81
Men History of Anxiety Disorder	Men PPD	-1.08	-2.99	.91

Note. B = Estimate for the Effect. SE = Standard Error. 95% CI = 95% Bootstrap Confidence Interval. Wm = women. PPD = Postpartum Distress. Scores above 5 on role involvement indicate that men contribute more to that domain and scores below 5 indicate that women contribute more to that domain.

*p<.05. **p<.01.

Figure 11. Results from the Path Analysis Examining the Relationship between Men's Role Involvement and Role Satisfaction in Three Domains and Women's Relationship Adjustment and Postpartum Distress

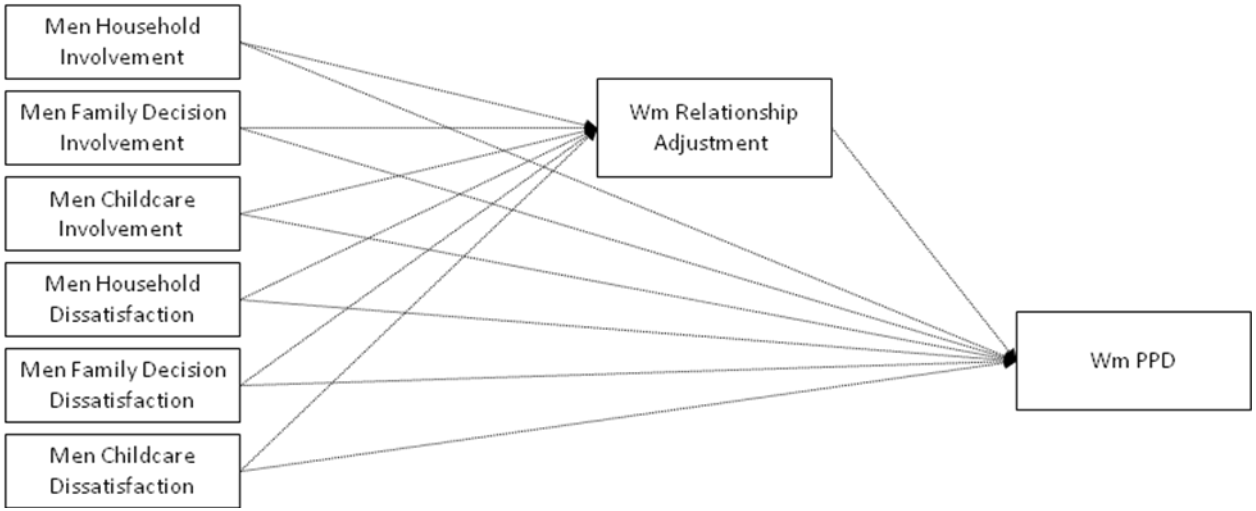
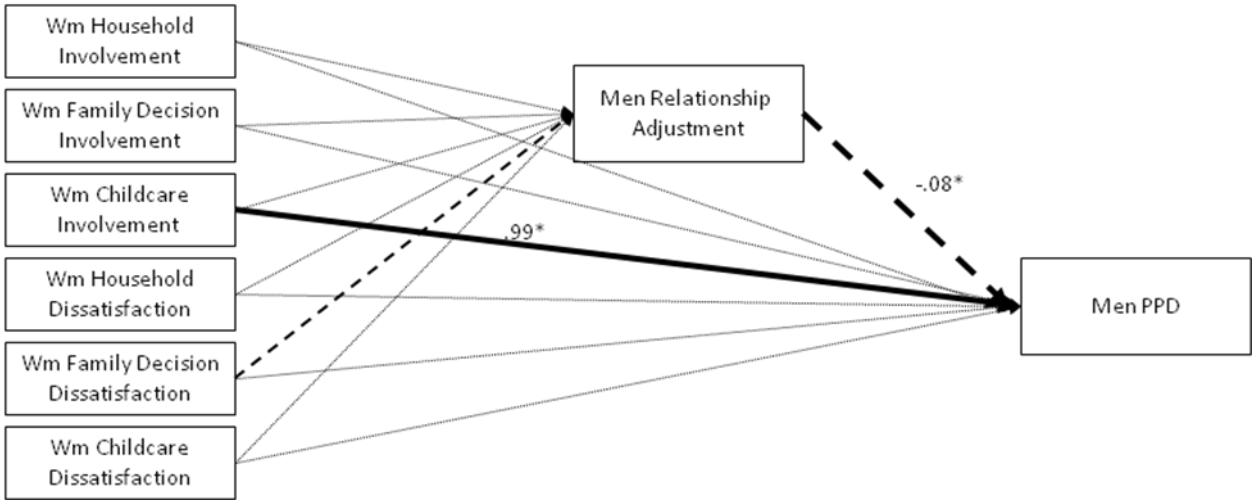


Figure 12. Results from the Path Analysis Examining the Relationship between Women's Role Involvement and Role Satisfaction in Three Domains and Men's Relationship Adjustment and Postpartum Distress



relationship adjustment. That is, greater levels of dissatisfaction with family decision-making for women predicted lower relationship adjustment for men, and, in turn, lower relationship adjustment for men predicted greater PPD for men. The direct effect for men's relationship adjustment on men's PPD was also significant, as it was in men's only models. Finally, the direct effect of women's childcare role involvement on men's PPD was significant, such that the more women reported men were involved in childcare, the greater men's PPD. No other indirect or direct effects were significant. Thus, not only did men's decision-making satisfaction predict men's PPD, but women's did as well, and this association was fully mediated by men's relationship adjustment. Furthermore, higher levels of men's involvement in childcare, per women's report, also predicted men's PPD. Regarding overall model fit, R^2 = .38 for PPD and R^2 =.21 for relationship adjustment, indicating that 38% of the variance in men's PPD and 21% of the variance in men's relationship adjustment was accounted for by this model.

Summary. In summary, neither men's nor women's report of role involvement and role satisfaction in specific domains predicted women's relationship adjustment or PPD. However, men's greater role involvement and greater role satisfaction in family decision-making, as well as women's greater role satisfaction in family decision-making, each predicted less PPD for men, and these effects were fully mediated by men's greater relationship adjustment. Additionally, men's greater involvement in childcare per women's report predicted greater PPD for men. Between 17% and 38% of the variance in PPD was explained within each of these models, and between 19% and 33% of the variance in relationship adjustment was explained within these models.

Discussion

Although societal beliefs generally tout the postpartum period as a purely joyful time, this period can also be stressful and overwhelming, marked by both individual and relationship distress. Indeed, in the present community-based sample, 18.29% of women and 8.33% of men scored in a range of distress suggestive of a potential depressive episode. Given the potential negative impact PPD can have on each individual, their relationship, and their child, it is imperative to better understand factors, such as role functioning, which contribute to both individual distress and relationship adjustment during this important time period. Literature to date has focused primarily on identifying prenatal risk factors of PPD, which while important, does not take into account the fact that many factors, including role functioning, can differ dramatically from the prenatal to the postpartum period. Additionally, few studies have examined how multiple factors jointly predict PPD. This study sought to build on previous literature by examining how multiple aspects of role functioning for individuals and relationship adjustment predict PPD in the *postpartum* period. Moreover, this study included *both* partners, which is significant given that the current literature is limited by focusing largely on women rather than on male partners or couples.

The first overarching aim of the study was to examine whether several aspects of role functioning (i.e., role intensity, role acceptability, work-family strain, and work-family gains) predicted PPD, and whether this was partially mediated by relationship adjustment, both within and across partners. Results partially supported this hypothesis

and suggested that for each gender, one primary role functioning variable was particularly important: (a) for women—work-family strain and (b) for men—role unacceptability. First, results indicated that women's work-family strain predicted their own greater PPD as well as men's *greater* relationship adjustment. This finding indicates that for women, PPD does not depend on how much women are doing or how acceptable this is to them. Rather, PPD is related to whether women perceive that it is literally possible to meet various role demands in multiple domains. The more women perceive that their roles somehow conflict or feel overwhelmed by trying to accomplish tasks in multiple role domains, the more apt they are to experience PPD. Thus, even if women perceive a high level of involvement and responsibility in various roles and their level of involvement is unacceptable to them, if they can find a way to accomplish their various demands, they may still report functioning well individually and as a couple in the first three months postpartum.

Interestingly, there is not a significant difference in mean level of work-family strain reported by men and women. Thus, it is not necessarily that women have a greater experience of work-family strain, but rather that work-family strain has a differential impact for them. The learned helplessness model of depression suggests that the more that people perceive that they are unable to accomplish their goals or are otherwise helpless, the more apt they are to experience depression (Seligman, Rosellini, & Kozak, 1975). Perhaps the more women experience work-family strain, the more apt they are to feel helpless, thus leading to their experience of PPD. That is, rather than the impact of work-family strain on PPD being mediated by relationship functioning, it may be mediated by a change in cognition or perception of helplessness. It is not yet clear,

however, why work-family strain may have this differential impact on men and women, and future research should explore potential mechanisms of the impact of work-family strain on women's PPD.

The fact that relationship adjustment, role intensity, and role acceptability did not predict PPD for women was surprising, given that previous literature has suggested that concurrent relationship dissatisfaction is associated with PPD (e.g., Hock, Schirtzinger, Lutz, & Widaman, 1995), as is prenatal role intensity and role unacceptability (Hall & Long, 2007). One possible explanation is that this has to do with the timeframe in which these factors were examined. Only one previous study examined role intensity and role acceptability as predictors of PPD (Hall & Long, 2007), and that investigation found that both *prenatal* role intensity and role acceptability, but not work-family conflict, predicted PPD. This pattern of results suggests that perhaps prior to the childbirth, women may attend to their level of involvement in various roles and how acceptable that is; however, once a new role is either added (for first-time parents) or expanded (for second or greater time parents), the salience of these aspects of role functioning decrease and the importance of perceiving one's ability to accomplish responsibilities is heightened. Similarly, it may also be that in the initial postpartum months, relationship adjustment is not a particular salient or potent predictor of PPD for women, but it may be more so in the prenatal period or later in the postpartum period. That is, other variables, such as physical/biological factors, may be more relevant than relational factors for women soon after they have had a child. This set of findings highlights the importance of examining not only prenatal predictors of PPD but also postpartum predictors. Future research should examine predictive factors over time, beginning in the prenatal period and

extending further into the postpartum period, to better understand the differential impact various factors may have at different time periods.

In addition to predicting women's own PPD, women's work-family strain predicted men's relationship adjustment such that the more women experienced work-family strain, the *higher* men's relationship adjustment. This suggests that although women may experience work-family strain, they, on average, are not behaving in a way that is detrimental to the relationship, and in fact are perhaps doing the opposite. Women may not be providing cues that they are experiencing work-family strain, or only providing them subtly, such that men are unaware of and, therefore, not attending to the strain that women are experiencing. Thus, women may be very other-focused, attempting to manage multiple roles on their own without indicating to their partners that they need assistance or complaining about their partners. Although men may be unaware of the *distress* associated with work-family strain for women, one possibility for the association with *higher* relationship adjustment for men is that men *are* aware of the level of involvement women have in various roles. That is, men might be aware of and responding positively to how much work women are doing but may not be aware of the level of distress that this workload causes women. Alternatively, the findings could reflect that these women are experiencing strain because they are shouldering the majority of the tasks that come with a new baby; such a strategy could make fewer demands on their male partners, who subsequently are more satisfied in the relationship.

Although women's lack of distress cues in response to their work-family strain may protect the relationship and family system, this strategy could be detrimental to the women themselves. This phenomenon is similar to what is known in the cancer literature

as protective buffering (e.g., Manne et al., 2007), in which partners of women who have cancer tend to ignore their own concerns and fears and instead provide messages to their partner that everything is alright in order to "protect" their partners. Although this response is well-intentioned, it can have a negative impact on both partners and the relationship. Whether it is women who are not providing cues to men regarding their experience of work-family strain or men who are not picking them up, it is important for men to have greater awareness of women's experience of strain, given the impact this has on her own PPD.

In terms of control variables, number of children significantly predicted women's PPD in the first model, and length of marriage predicted women's PPD in the second, such that having more children and being married longer each predicted less PPD. Given that the same control variables did not predict PPD in each model and given they were only control variables, their significant should not be over-interpreted. However, one explanation regarding number of children is that women may become accustomed to the parenting role and, therefore, do not experience as much PPD with the addition of a child. Alternatively, it could be a self-selection effect for having more children, such that women who experienced less distress with their first child are more apt to continue to have children. Regarding length of marriage, it may be that the longer women are married, the more stable they perceive their relationship, and, therefore, the more women feel equipped to deal with postpartum challenges.

Turning next to the two male models, results indicated that men's role unacceptability predicted their own greater PPD, partially mediated by their own poorer relationship adjustment, which trended towards significance. The direct effects of

relationship adjustment and role unacceptability also trended towards significance, indicating that each is a salient predictor in and of themselves. The present findings are consistent with previous research which has found that low relationship satisfaction or adjustment and a high discrepancy between prenatal expectations and experiences postpartum each predict men's PPD (e.g., Bielawska-Batorowicz & Kossakowska-Petrycka, 2006). In addition to predicting their own PPD, men's role unacceptability significantly predicted women's poorer relationship adjustment.

These findings suggest that how involved men are in various roles or the degree to which they are able to fit multiple roles together does not significantly impact their individual or relationship functioning. Instead, men's subjective sense of how acceptable their involvement is in their roles is of primary importance to men. Interestingly, whereas women reported significantly higher levels of role intensity, men reported significantly higher levels of unacceptability. That is, women reported objectively doing more in various role domains than did men, yet men reported a higher subjective sense that their role involvement was unacceptable to them. Thus, men reported experiencing their roles as being more unacceptable, and this unacceptability then predicted poorer relationship adjustment and greater PPD.

Research has consistently found relationship adjustment to predict PPD but has not explicated the mechanism through which relationship adjustment affects PPD. As noted previously, the broader couple literature suggests two possible explanations. First, poor relationship adjustment has been conceptualized as being a chronic stressor for individuals (Epstein & Baucom, 2002), which could be compounded by the stress associated with having a child, and this accumulation of stress may lead to PPD.

Alternatively, positive relationship adjustment may provide protection for individuals, decreasing their likelihood of developing PPD. Both of these may be true for men in the postpartum period as well. Also, as noted previously, the same may be true for women later in the postpartum period; however, the fact that relationship adjustment was a significant predictor for men but not women suggests that other factors, such as physical/biological factors, may be more salient for women in the initial postpartum months.

Men's experience of role unacceptability impacted not only their own relationship adjustment and PPD but women's relationship adjustment as well. Thus, whereas woman may engage in protective buffering, shielding her partner from the work-family strain she is experiencing, the current findings could mean that when men find their roles to be unacceptable, they behave in ways that are experienced by women as negative, thus decreasing women's overall relationship adjustment. Given that women perceive themselves to be more involved in specific roles (household tasks, childcare tasks, and family decision-making) as well as more involved in roles overall (i.e., role intensity), men's experience of role unacceptability may be particularly bothersome and lead to her experience of lower relationship adjustment. However, it is unclear how men are conveying that they find their roles unacceptable and how those behaviors are specifically impacting her experience of the couple's relationship. Also, given the current study is correlational in nature, it is not possible to determine directionality, and it may therefore be that women's relationship adjustment is impacting men's experience of role unacceptability. That is, perhaps when men are in more distressed relationships, they are more likely to experience their roles as unacceptable. These potential mechanisms should

be further explored in future research to determine whether men's perceptions of acceptability, behaviors, women's interpretations of those behaviors, or the broader relationship (or a combination of these factors) should be potential targets for therapy.

The second overarching aim of the study was to examine whether relative role involvement and role satisfaction within *specific* domains predicted PPD, and whether this was partially medicated by relationship adjustment, both within and across partners. It should first be noted that in the present study, both men and women reported that the division of household tasks was fairly equal. However, both men and women reported that women were more involved than men in family decision-making and childcare; women also reported that they were slightly more involved than men in household tasks although men reported that they were slightly more involved than women in this domain. Additionally, men perceived themselves to be slightly more involved in each domain than women perceived them to be. Overall, these results suggest that the division of labor was perceived to be fairly equal, with women doing slightly more than men and both partners perceiving their own contribution as being slightly more than their partner viewed their contribution. Previous research has found that the division of labor becomes more traditional after the birth of the first child (e.g., Glade, Bean, & Vira, 2005), with women carrying the majority of household responsibilities, for instance (e.g., Krieg, 2007). The present study suggests that in the first several months postpartum, divisions are not exactly equal but not extremely traditional either.

Neither men's nor women's (a) role involvement nor (b) role satisfaction in specific domains predicted women's PPD; thus, the second hypothesis was not supported for women. The finding that women's own role involvement and role satisfaction did not

predict women's PPD is consistent with findings discussed above which suggested that role intensity and role acceptability (i.e., degree of role involvement and subjective satisfaction) are not associated with women's PPD. In terms of cross-partner associations, whereas overall role unacceptability for men predicted women's relationship adjustment in the first set of models, men's role satisfaction in specific domains did not predict women's relationship adjustment. That is, women's relationship adjustment is impacted by men's overall experience of role unacceptability but not their domain-specific role satisfaction. Thus, women appear to be responding to men's global subjective sense of their roles rather than domain-specific concerns. This pattern of results may indicate that men's behaviors towards their female partners are impacted by their overall experience of role unacceptability but not their domain-specific concerns. Men may, for example, express general dissatisfaction but may not articulate any domain-specific concerns. Finally, it should be noted that women's length of marriage was a significant control variable in each of these models, which is consistent with findings reported above and, again, suggests that women who have been involved in their relationships for longer period of time are less apt to experience PPD.

Men's models, on the other hand, did partially support the study's second hypothesis; these two models found that men's greater role involvement and greater role satisfaction in family decision-making, as well as women's greater role satisfaction in family decision-making, each predicted less PPD for men, and these effects were fully mediated by men's greater relationship adjustment. Additionally, men's greater involvement in childcare per women's report predicted *greater* PPD for men. Men's involvement and satisfaction in family decision-making may be his operationalization of

role unacceptability. That is, men's experience of lack of involvement and low satisfaction with family decision-making may ultimately lead them to perceive a lack of acceptability across role domains, given they do not perceive themselves to have been involved in the decisions made regarding those role domains. If so, then increasing men's involvement in family decision-making may potentially impact their overall level of role acceptability, which then could potentially impact their PPD and both their own and women's relationship adjustment.

The finding that women's satisfaction in the family decision-making domain predicted men's PPD is somewhat surprising, given that women's family decision-making satisfaction did not predict their own PPD. This pattern of findings suggests that while men may not be cued into women's experience of work-family strain, they *are* cued into women's family decision-making satisfaction, more so than women may be themselves. Or, perhaps women are simply engaging in more positive relationship behaviors when they are satisfied in the family decision-making domain, and it is these general positive behaviors rather than women's satisfaction per se that are impacting men's PPD. However, the fact that both men's and women's family decision-making impact men's PPD does suggest that this is a particularly salient domain for men, providing further support for the notion that this may be the domain that primarily impacts men's global sense of role acceptability. Contrary to this interpretation, however, a simple correlation matrix did *not* find that role involvement or satisfaction in the family decision-making domain was associated with role unacceptability for men. Thus, overall role unacceptability and family decision-making may impact men's PPD in different ways; mechanisms should be further explored in future research.

Finally, men's involvement in childcare per women's report predicts men's PPD, even though men's *own* report of their role involvement did not. Given both men and women, on average, perceive their own role involvement to be higher than what the opposite gender perceived it to be, it may be that if *women* are reporting that men are more involved in a given role domain, they my actually be more involved. That is, perhaps both genders over-report their own level of involvement and therefore when women report greater levels of men's involvement, this may actually accurate represent men's involvement. Men may feel overwhelmed by high levels of involvement in childcare or feel unequipped to handle tasks involved in this role domain. This may stem from several factors such as the fact that in American society women tend to be more involved with children at an earlier age than men (i.e., babysitting), as well as the fact that some childcare tasks, such as breastfeeding, necessitate women's involvement. If men try to sooth an infant, for instance, they may feel overwhelmed without women's help if they are concerned that the child is hungry and they do not have a bottle. Women, on the other hand, are generally physically able to feed and sooth the child.

In addition to exploring these main primary study aims, non-independence of the data was examined to better understand whether men's and women's role functioning, relationship adjustment and PPD were related to one another. As expected and consistent with the broader couples literature, relationship adjustment was positively associated across partners, such that greater relationship adjustment for women was associated with greater relationship adjustment for men. However, PPD was *not* significantly associated between partners. This was surprising and inconsistent with other literature which has found that male PPD is often comorbid with female PPD (e.g., Edhborg, Matthiesen,

Lundh, & Widström, 2005). One possible reason for this lack of association in the present sample is that, on average, both men and women only experienced mild distress. It is possible that PPD is only associated at higher levels of distress. Or perhaps PPD is relatively unrelated early in the postpartum period but becomes more strongly associated over time.

In terms of non-independence in role functioning, men's and women's reports of relative role involvement (i.e., their own level of involvement compared to their partner's level of involvement) in all three domains were positively associated, such that the more women perceived men to be involved in a domain, the more men also perceived themselves to be involved in this domain. This suggests that both men and women have similar views on how tasks are divided within the household. Also, household role dissatisfaction scores were positively associated. However, men's and women's role intensity, role unacceptability, work-family strain, work-family gains, family decision-making role satisfaction, and childcare role satisfaction were not significantly associated with one another across partners. Thus, how one partner experiences their own role functioning is relatively independent of how their partner perceives their own role functioning. In other words, it is possible for both partners to experience their roles very differently during the postpartum period, perhaps with one partner reporting much better role functioning (i.e., lesser role intensity, role unacceptability, and work-family strain, along with greater work-family gains, family decision-making role satisfaction, and childcare role satisfaction) than their partner.

Overall, this study suggested that several aspects of role functioning are important for couples in the postpartum period, impacting both relationship adjustment and PPD,

but that the particular aspects of roles that are most salient differ for men and for women. For women, the key variable is work-family strain. Women's work-family strain predicted both their own greater PPD, as well as men's greater relationship adjustment. Thus, women's PPD is most impacted by the degree to which they are able to fit multiple roles together. On the other hand, men's PPD was most impacted by their degree of involvement in childcare (per women's report) as well as more subjective aspects of roles including family decision-making and overall role unacceptability. More specifically, several aspects of role functioning emerged as predictors of men's PPD, via their own worse relationship adjustment, including role unacceptability, men's own family decision-making involvement and dissatisfaction, and women's family decision-making satisfaction. Furthermore, men's role unacceptability predicted worse relationship adjustment for *women*. Thus, women's work-family strain and men's role unacceptability impacted not only within partner PPD, but also cross-partner relationship adjustment. These findings suggest that men's subject sense of roles and women's ability to fit multiple roles together are important variables for individual well-being and relationship functioning in the postpartum period.

This study's findings are preliminary and further research is needed to replicate findings, further explore mechanisms, and determine whether salient predictors differ over various time frames with in the postpartum period. However, several findings do lend support to the notion that treating PPD in a couple context may be warranted. First, men's role unacceptability predicted women's relationship adjustment, and women's work-family strain and family decision-making satisfaction predicted men's relationship adjustment. Thus, each partner's role functioning predicted their partners' relationship

adjustment in the postpartum period. Second, men's relationship adjustment directly predicted men's PPD. Thus, treating PPD in a couple context may be advantageous. Even so, future longitudinal research is warranted before such treatments are created, given this study was correlational in nature and causality cannot be determined. Despite the need for further research, the current findings do suggest several potential treatment targets.

Couple-based interventions typically fall into one of three categories (Baucom, Whisman, & Paprocki, 2012). First, in partner-assisted interventions, partners act as "coaches," and assist individuals within interventions typically found in individually-based therapies (e.g., partner-assisted behavioral activation for depression). This type of intervention does not attempt to change couple functioning per se, but rather utilizes partners to support and encourage individuals. Disorder-specific interventions, however, do target couple functioning, but only target aspects of couple functioning that impact or are impacted by the disorder (e.g., intimacy building activities to address decreased sex drive in depression). Finally, couple therapy per se does not take the disorder specifically into account, but rather attempts to enhance couple functioning broadly and directly. This then indirectly impacts individual functioning, given individual and relationship functioning are tightly intertwined. The current findings suggest that both couple therapy per se and disorder specific interventions may be helpful in assisting couples in which one or both partners have PPD.

First, overall relationship adjustment for men predicted men's PPD, suggesting that couple therapy which impacts relationship adjustment might reduce men's experience of PPD, although it may not for women. Additionally, couples may be taught communication skills aimed at (a) allowing couples to share their thoughts and feelings

and feel respected and validated by their partners and (b) providing a way to make effective decisions regarding roles. Therapists may then assist partners in having sharing thoughts and feelings discussions around key aspects of roles for each of partner. Women may be encouraged to discuss their experience of and distress related to work-family strain, fostering greater awareness for men. Furthermore, women may be assisted in effectively eliciting support from their partner, and men may be assisted to better attend to women's experience of work-family strain. For men, it may be important to foster greater acceptance of role involvement, which can include normalization of the changes in roles couples typically experience in the postpartum period. Also, couples may be asked to discuss expectations regarding roles and use decision-making skills to decide jointly on each partner's tasks within various role domains, ensuring men are involved with family decision-making. These joint decision-making conversations regarding role arrangements should focus on decisions which leave women feeling they are able to fit multiple roles together and men experiencing that their level of role involvement is acceptable and in line with their expectations.

As noted above, further research is needed before any of these suggestions are utilized, given the current study is correlational in nature. Thus, although the direction of effects discussed above is consistent with theory, it could be that PPD or relationship adjustment impact roles and/or a third variable impacts both. For example, perhaps men with lower relationship adjustment are more apt to perceive that their roles are unacceptable; likewise, experiences of hopelessness associated with PPD may make women more apt to perceived work-family strain.

Several other limitations of the current investigation should be noted. First, in the present study, 18.29% of women and 8.33% of men scored in a range suggestive of potential depression, which is consistent with the broader literature which suggests that 19.2% of women and 7.7% of men experience either a minor or major depressive episode within the first three months postpartum (Gavin et al., 2005; Paulson & Bazemore, 2010). Thus, the present study represents a typical, community based sample in terms of rates of potential depression. However, the effect of roles may differ in a clinically depressed sample; thus, the present findings should not be generalized to a more depressed sample. Likewise, the generalizability of findings are limited by the fact that the current sample is predominantly white, middle-class (median income range of $75,000 to $99), highly educated (median level of education is some graduate school for men and master's level for women), and high in relationship adjustment. Finally, the factor analyses of the REQ indicated that this measure could not be utilized to create and use domain-specific subscale scores; therefore, a different measure had to be used to explore the second hypothesis. It would have been preferable to use the same measure to examine overall *and* domain-specific levels of role involvement and role satisfaction. Additionally, use of this alternative measure meant that several role domains could not be examined (partner, individual, and work).

Despite these limitations, this study significantly contributes to the literature by examining how multiple aspects of role functioning and relationship functioning come together to predict PPD in the *postpartum* period, for both men and women. Overall, this study highlights that although society suggests that the postpartum period is a purely joyful period, it can also be distressing for both partners. Furthermore, men's subjective

sense of roles (i.e., role unacceptability and family-decision making involvement and satisfaction) and women's experience of being able to fit multiple roles together (i.e., work-family strain) impact both their individual and relationship functioning in the postpartum period. Thus, assisting couples in their negotiation of roles, particularly around these specific aspects of role functioning, in the early postpartum period should be considered and may have a significant impact on individual and relationship functioning.

References

Abramowitz, J. S., Meltzer-Brody, S., Leserman, J., Killenberg, S., Rinaldi, K., Mahaffey, B. L., & Pedersen, C. (2010). Obsessional thoughts and compulsive behaviors in a sample of women with postpartum mood symptoms. *Archives of Women's Mental Health, 13*(6), 523-530. doi:10.1007/s00737-010-0172-4

Cohen, J., Cohen, P., West, S.G., & Aiken, L.S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences.* Mahwah, N.J.: Lawrence Erlbaum Associates.

Ballard, & Davies, R. (1996). Postnatal depression in fathers. *International Review of Psychiatry, 8*(1), 65-71. doi:10.3109/09540269609037818

Banti, S., Borri, C., Camilleri, V., Cortopassi, C., Montagnani, M. S., Ramacciotti, D., . . . Mauri, M. (2009). Perinatal mood and anxiety disorders. clinical assessment and management. A review of current literature. *Giornale Italiano Di Psicopatologia/ Italian Journal of Psychopathology, 15*(4), 351-366.

Barnett, R. C., Marshall, N. L., & Pleck, J. H. (1992). Men's multiple roles and their relationship to men's psychological distress. *Journal of Marriage & the Family, 54*(2), 358-367. doi:10.2307/353067

Bartlett, E. E. (2004). The effects of fatherhood on the health of men: A review of the literature. *Journal of Men's Health & Gender, 1*(2-3), 159-169. doi:10.1016/j.jmhg.2004.06.004

Baruch, G. K., & Barnett, R. C. (1986). Role quality, multiple role involvement, and psychological well-being in midlife women. *Journal of Personality and Social Psychology, 51*(3), 578-585. doi:10.1037/0022-3514.51.3.578

Baucom, D.H., Whisman, M.A., & Paprocki, C. (2012). Couple-based interventions for psychopathology. *Journal of Family Therapy, 34*(3), 250-270. doi: 10.1111/j.1467-6427.2012.00600.x

Beach, S. R. H., Dreifuss, J. A., Franklin, K. J., Kamen, C., & Gabriel, B. (2008). Couple therapy and the treatment of depression. In A. S. Gurman (Ed.), *Clinical handbook of couple therapy (4th ed.).* (pp. 545-566). New York, NY US: Guilford Press.

Beach, S. R. H., & Gupta, M. (2003). Depression. In M. A. Whisman (Ed.), *Treating difficult couples: Helping clients with coexisting mental and relationship disorders.* (pp. 88-113). New York, NY US: Guilford Press.

Beck, C. T. (2001). Predictors of postpartum depression: An update. *Nursing Research, 50*(5), 275-285. doi:10.1097/00006199-200109000-00004

Belsky, J., Lang, M., & Huston, T. L. (1986). Sex typing and division of labor as determinants of marital change across the transition to parenthood. *Journal of Personality and Social Psychology, 50*(3), 517-522. doi:10.1037/0022-3514.50.3.517

Bielawska-Batorowicz, E., & Kossakowska-Petrycka, K. (2006). Depressive mood in men after the birth of their offspring in relation to a partner's depression, social support, fathers' personality and prenatal expectations. *Journal of Reproductive and Infant Psychology, 24*(1), 21-29. doi:10.1080/02646830500475179

Bradley, R., & Slade, P. (2011). A review of mental health problems in fathers following the birth of a child. *Journal of Reproductive and Infant Psychology, 29*(1), 19-42. doi:10.1080/02646838.2010.513047

Burke, L. (2003). The impact of maternal depression on familial relationships. *International Review of Psychiatry, 15*(3), 243-255. doi:10.1080/0954026031000136866

Campbell, S. B., Cohn, J. F., Flanagan, C., & Popper, S. (1992). Course and correlates of postpartum depression during the transition to parenthood. *Development and Psychopathology, 4*(1), 29-47. doi:10.1017/S095457940000554X

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98*(2), 310-357.

Cowan, C. P., & Cowan, P. A. (1988). Who does what when partners become parents: Implications for men, women, and marriage. *Marriage & Family Review, 12*(3-4), 105-131. doi:10.1300/J002v12n03_07

Cox, J. L., Holden, J. M., & Sagovsky, R. (1987). Detection of postnatal depression: Development of the 10-item edinburgh postnatal depression scale. *British Journal of Psychiatry, 150*, 782-786. doi:10.1192/bjp.150.6.782

Des Rivières-Pigeon, C., Saurel-Cubizolles, M., & Romito, P. (2002). Division of domestic work and psychological distress 1 year after childbirth: A comparison between france, quebec and italy. *Journal of Community & Applied Social Psychology, 12*(6), 397-409. doi:10.1002/casp.697

Doss, B. D., Rhoades, G. K., Stanley, S. M., & Markman, H. J. (2009). The effect of the transition to parenthood on relationship quality: An 8-year prospective study. *Journal of Personality and Social Psychology, 96*(3), 601-619. doi:10.1037/a0013969

Dudley, M., Roy, K., Kelk, N., & Bernard, D. (2001). Psychological correlates of depression in fathers and mothers in the first postnatal year. *Journal of Reproductive and Infant Psychology, 19*(3), 187-202. doi:10.1080/02646830120073206

Edhborg, M., Matthiesen, A. -., Lundh, W., & Widström, A. -. (2005). Some early indicators for depressive symptoms and bonding 2 months postpartum--A study of new mothers and fathers. *Archives of Women's Mental Health, 8*(4), 221-231. doi:10.1007/s00737-005-0097-5

Epstein, N. B., & Baucom, D. H. (2002). *Enhanced cognitive-behavioral therapy for couples: A contextual approach*. Washington, DC US: American Psychological Association. doi:10.1037/10481-000

Flynn, H. A. (2010). Depression and postpartum disorders. In M. A. Becker (Ed.), *A public health perspective of women's mental health.* (pp. 109-120). New York, NY US: Springer Science + Business Media. doi:10.1007/978-1-4419-1526-9_6

Funk, J. L., & Rogge, R. D. (2007). Testing the ruler with item response theory: Increasing precision of measurement for relationship satisfaction with the couples satisfaction index. *Journal of Family Psychology, 21*(4), 572-583. doi:10.1037/0893-3200.21.4.572

Gavin, N. I., Gaynes, B. N., Lohr, K. N., Meltzer-Brody, S., Gartlehner, G., & Swinson, T. (2005). Perinatal depression: A systematic review of prevalence and incidence. *Obstetrics and Gynecology, 106*(5 Pt 1), 1071-1083. doi:10.1097/01.AOG.0000183597.31630.db

Glade, A. C., Bean, R. A., & Vira, R. (2005). A prime time for Marital/Relational intervention: A review of the transition to parenthood literature with treatment recommendations. *American Journal of Family Therapy, 33*(4), 319-336. doi:10.1080/01926180590962138

Goldberg, A. E., & Perry-Jenkins, M. (2004). Division of labor and working-class women's well-being across the transition to parenthood. *Journal of Family Psychology, 18*(1), 225-236. doi:10.1037/0893-3200.18.1.225

Goldberg, A. E., & Perry-Jenkins, M. (2007). The division of labor and perceptions of parental roles: Lesbian couples across the transition to parenthood. *Journal of Social and Personal Relationships, 24*(2), 297-318. doi:10.1177/0265407507075415

Goodman, J. H. (2008). Influences of maternal postpartum depression on fathers and on father-infant interaction. *Infant Mental Health Journal, 29*(6), 624-643. doi:10.1002/imhj.20199

Greenhaus, J. H., & Beutell, N. J. (1985). Sources and conflict between work and family roles. *Academy of Management Review, 10*(1), 76-88. doi:10.2307/258214

Grice, M. M., McGovern, P. M., Alexander, B. H., Ukestad, L., & Hellerstedt, W. (2011). Balancing work and family after childbirth: A longitudinal analysis. *Women's Health Issues, 21*(1), 19-27. doi:10.1016/j.whi.2010.08.003

Grote, N. K., & Clark, M. S. (2001). Perceiving unfairness in the family: Cause or consequence of marital distress? *Journal of Personality and Social Psychology, 80*(2), 281-293. doi:10.1037/0022-3514.80.2.281

Hall, W. A. (1993). Development and early testing of the role enactment questionnaire. In *Canadian journal of nursing research* (pp. 57)

Hall, W. A., & Long, B. C. (2007). Relations among prenatal role quality, life satisfaction, and dual-earner parents' postnatal depression. *Journal of Prenatal & Perinatal Psychology & Health, 21*(3), 231-248. Retrieved from http://birthpsychology.com/journals

Hock, E., Schirtzinger, M. B., Lutz, M. B., & Widaman, K. (1995). Maternal depressive symptomatology over the transition to parenthood: Assessing the influence of marital satisfaction and marital sex role traditionalism. *Journal of Family Psychology, 9*(1), 79-88. doi:10.1037/0893-3200.9.1.79

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*(1), 1-55. doi:10.1080/10705519909540118

Katz-Wise, S., Priess, H. A., & Hyde, J. S. (2010). Gender-role attitudes and behavior across the transition to parenthood. *Developmental Psychology, 46*(1), 18-28. doi:10.1037/a0017820

Kenny, D. A., Kashy D. A., Cook W. L. (2006), *Dyadic data analysis*. New York: Guilford Press.

Koivunen, J. M., Rothaupt, J. W., & Wolfgram, S. M. (2009). Gender dynamics and role adjustment during the transition to parenthood: Current perspectives. *The Family Journal, 17*(4), 323-328. doi:10.1177/1066480709347360

Krieg, D. B. (2007). Does motherhood get easier the second-time around? Examining parenting stress and marital quality among mothers having their first or second child. *Parenting: Science and Practice, 7*(2), 149-175. doi: 10.1080/15295190701306912

Lawrence, E., Rothman, A. D., Cobb, R. J., & Bradbury, T. N. (2010). Marital satisfaction across the transition to parenthood: Three eras of research. In R. D. Parke (Ed.), *Strengthening couple relationships for optimal child development: Lessons from research and intervention.* (pp. 97-114). Washington, DC US: American Psychological Association. doi:10.1037/12058-007

MacDermid, S. M., Huston, T. L., & McHale, S. M. (1990). Changes in marriage associated with the transition to parenthood: Individual differences as a function of sex-role attitudes and changes in the division of household labor. *Journal of Marriage & the Family, 52*(2), 475-486. doi:10.2307/353041

Mamun, A. A., Clavarino, A. M., Najman, J. M., Williams, G. M., O'Callaghan, M. J., & Bor, W. (2009). Maternal depression and the quality of marital relationship: A 14-year prospective study. *Journal of Women's Health (2002), 18*(12), 2023-2031. doi:10.1089/jwh.2008.1050

Manne, S. L., Norton, T. R., Ostroff, J. S., Winkel, G., Fox, K., & Grana, G. (2007). Protective buffering and psychological distress among couples coping with breast cancer: The moderating role of relationship satisfaction. *Journal of Family Psychology, 21*(3), 380-388. doi: 10.1037/0893-3200.21.3.380

Marshall, N. L., & Barnett, R. C. (1993). Work-family strains and gains among two-earner couples. *Journal of Community Psychology, 21*(1), 64-78. doi:10.1002/1520-6629(199301)21:1<64::AID-JCOP2290210108>3.0.CO;2-P

Marshall, N. L., & Tracy, A. J. (2009). After the baby: Work-family conflict and working mothers' psychological health. *Family Relations, 58*(4), 380-391. doi:10.1111/j.1741-3729.2009.00560.x

Matthey, S., Barnett, B., Kavanagh, D. J., & Howie, P. (2001). Validation of the edinburgh postnatal depression scale for men, and comparison of item endorsement with their partners. *Journal of Affective Disorders, 64*(2-3), 175-184. doi:10.1016/S0165-0327(00)00236-6

McGovern, P., Dowd, B., Gjerdingen, D., Dagher, R., Ukestad, L., McCaffrey, D., & Lundberg, U. (2007). Mothers' health and work-related factors at 11 weeks postpartum. *Annals of Family Medicine, 5*(6), 519-527. doi:10.1370/afm.751

McGovern, P., Dowd, B., Gjerdingen, D., Gross, C. R., Kenney, S., Ukestad, L., & Lundberg, U. (2006). Postpartum health of employed mothers 5 weeks after childbirth. *Annals of Family Medicine, 4*(2), 159-167. doi:10.1370/afm.519

McMahon, C., Barnett, B., Kowalenko, N., & Tennant, C. (2005). Psychological factors associated with persistent postnatal depression: Past and current relationships, defence styles and the mediating role of insecure attachment style. *Journal of Affective Disorders, 84*(1), 15-24. doi:10.1016/j.jad.2004.05.005

Milgrom, J., Gemmill, A. W., Bilszta, J. L., Hayes, B., Barnett, B., Brooks, J., . . . Buist, A. (2008). Antenatal risk factors for postnatal depression: A large prospective study. *Journal of Affective Disorders, 108*(1-2), 147-157. doi:10.1016/j.jad.2007.10.014

Muthén, L.K. & Muthén, B.O. (1998-2010). Mplus User's Guide. Sixth Edition. Los Angeles, CA: Muthén & Muthén

O'Hara, M. W. (2009). Postpartum depression: What we know. *Journal of Clinical Psychology, 65*(12), 1258-1269. doi:10.1002/jclp.20644

O'Hara, M. W., & Swain, A. M. (1996). Rates and risk of postpartum depression-A meta-analysis. *International Review of Psychiatry, 8*(1), 37-54. doi:10.3109/09540269609037816

Patel, V., Rodrigues, M., & DeSouza, N. (2002). Gender, poverty, and postnatal depression: A study of mothers in goa, india. *The American Journal of Psychiatry, 159*(1), 43-47. doi:10.1176/appi.ajp.159.1.43

Paulson, J. F., & Bazemore, S. D. (2010). Prenatal and postpartum depression in fathers and its association with maternal depression: A meta-analysis. *JAMA : The Journal of the American Medical Association, 303*(19), 1961-1969. doi:10.1001/jama.2010.605

Perry-Jenkins, M., Goldberg, A. E., Pierce, C. P., & Sayer, A. G. (2007). Shift work, role overload, and the transition to parenthood. *Journal of Marriage and Family, 69*(1), 123-138. doi:10.1111/j.1741-3737.2006.00349.x

Piechowski, L. D. (1992). Mental health and women's multiple roles. *Families in Society, 73*(3), 131-139. Retrieved from http://www.familiesinsociety.org/

Pinheiro, R. T., Magalhães, P. V. S., Horta, B. L., Pinheiro, K. A. T., da Silva, R. A., & Pinto, R. H. (2006). Is paternal postpartum depression associated with maternal postpartum depression? population-based study in brazil. *Acta Psychiatrica Scandinavica, 113*(3), 230-232. doi:10.1111/j.1600-0447.2005.00708.x

Roberts, S. L., Bushnell, J. A., Collings, S. C., & Purdie, G. L. (2006). Psychological health of men with partners who have post-partum depression. *Australian and New Zealand Journal of Psychiatry, 40*(8), 704-711. doi:10.1111/j.1440-1614.2006.01871.x

Robertson, E., Grace, S., Wallington, T., & Stewart, D. E. (2004). Antenatal risk factors for postpartum depression: A synthesis of recent literature. *General Hospital Psychiatry, 26*(4), 289-295. doi:10.1016/j.genhosppsych.2004.02.006

Ross, L. E., Evans, S. E. G., Sellers, E. M., & Romach, M. K. (2003). Measurement issues in postpartum depression part 1: Anxiety as a feature of postpartum depression. *Archives of Women's Mental Health, 6*(1), 51-57. doi:10.1007/s00737-002-0155-1

Seligman, M. E., Rosellini, R. A., & Kozak, M. J. (1975). Learned helplessness in the rat: Time course, immunization, and reversibility. *Journal of Comparative and Physiological Psychology, 88*(2), 542-547. doi: 10.1037/h0076431

Schumacker, R. E. (2004). In Lomax R. G. (Ed.), *A beginner's guide to structural equation modeling*. Mahwah, N.J.: Lawrence Erlbaum Associates.

Steiger, J. H., & Lind, J. C. (1980, May). *Statistically based tests for the number of factors*. Paper presented at the annual spring meeting of the Psychometric Society, Iowa City, IA.

Terry, D. J., McHugh, T. A., & Noller, P. (1991). Role dissatisfaction and the decline in marital quality across the transition to parenthood. *Australian Journal of Psychology, 43*(3), 129-132. doi:10.1080/00049539108260136

Wang, S., & Chen, C. (2006). Psychosocial health of taiwanese postnatal husbands and wives. *Journal of Psychosomatic Research, 60*(3), 303-307. doi:10.1016/j.jpsychores.2005.08.012

Wee, K. Y., Skouteris, H., Pier, C., Richardson, B., & Milgrom, J. (2010). Correlates of ante- and postnatal depression in fathers: A systematic review. *Journal of Affective Disorders,* doi:10.1016/j.jad.2010.06.019

Whisman, M. A., & Bruce, M. L. (1999). Marital dissatisfaction and incidence of major depressive episode in a community sample. *Journal of Abnormal Psychology, 108*(4), 674-678. doi:10.1037/0021-843X.108.4.674

Whisman, M. A., & Jacobson, N. S. (1989). Depression, marital satisfaction, and marital and personality measures of sex roles. *Journal of Marital and Family Therapy, 15*(2), 177-186. doi:10.1111/j.1752-0606.1989.tb00797.x